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IN common with the press and the citizens of this and other lands, the ENGINEERING AND MINING JOURNAL mourns the death of GEN. ULYSSES S. GRANT, the foremost American of this generation. His achievements commanded the admiration, as his character attracted the affection, of all men. In his later years, misfortune bravely borne, and physical suffering heroically endured, added a new and pathetic glory to the luster of his military and civic career. The immediate sympathy of the public has been, no doubt, largely stimulated by the daily incidents of his long and obstinate struggle with disease. But when, in the course of time, the freshness of this impression shall have passed away, history will dwell upon the victories, in war and peace, undimmed by the sadness of the one defeat, of this great soldier and statesman of the republic. *

WE have received a copy of the *Mining and Mineral Statistics of Great Britain and Ireland* for the year 1884. This is the month of July. We should feel inclined to criticise sharply the British Home Department for such apparently unwarrantable delay in issuing a volume whose value is the greater the fresher are the facts it publishes, were it not that our Interior Department is still more guilty in this respect. Last year's statistics of the mineral production of this country were collected by the office of the Geological Survey early in the year, but they are still buried somewhere in Washington. Were the same activity displayed in giving them to the world that is exercised in publishing, as they are uttered, the vaporings of every member of Congress, we should have been able to set an example of energy and push to the old country. We shall give a full summary of the British statistics in our next.

THE recurrence of strikes in the iron and coal centers of the country is a matter for grave reflection. It is now about twenty years since the same causes threatened utterly to wreck the same industries in Great Britain. Trades-unions gave the men the strength of corporate existence, but not the wisdom and righteousness to use strength always for their own good, far less the good of the community at large. But on the side of the masters, there were such men as MUNDELLA and DALE, whose motives the men could not mistrust, and whose proposal of a system of arbitration could not therefore otherwise than receive a hearing. The workmen were Englishmen trained by centuries of representative government, even if they had not borne their full part in its responsibilities, to deliberate and abide by the vote of the majority or the decision of the umpire. The plan, therefore, of fixing the rate of wages and settling all disputes by arbitration of a joint board of masters and men, was in harmony with the habits of the people, was adopted, and the awards have been loyally adhered to, with few exceptions, by both parties to the compact. In this country, it is to be remarked that the most obstinate and riotous strikes of late have been carried on ostensibly by foreigners, by Poles and Hungarians, who are doubtless pliable as wax in the hands of the American demagogue. It will be more difficult to persuade this foreign element to adopt legislative methods for the settlement of grievances than to show the American workmen their congruity and fairness. But if some such system should be adopted by the employers and employed at large, it would be impossible for a small section of the latter to resist the general will, or to disturb the current of trade by such feeble obstruction as they could interpose.

A NOTABLE event has occurred in the failure of JOHN ROACH, the builder of iron ships. It has thrown out of employment many hundred workmen, which is a more widespread misfortune than that which has befallen their employer. And it has revived the discussion as to the possibility, under our present fiscal conditions, of building up a thriving ship-building industry. Mr. ROACH, it is stated, has built 90 per cent of the iron vessels sailing under the American flag; and of this 90 per cent, only 10 per cent were for the government. For the Dolphin and the steel cruisers, now the subject of dispute and probable litigation, he has received a large proportion of the contract price, and therefore it is unreasonable to suppose that his failure can be due solely to the delay in the payment of the small balance. Either, therefore, the catastrophe is fictitious—created in order to protect himself against legal action by the government, which few, who know Mr. ROACH, are willing to admit—or it has been brought about by the inevitable impossibility of building iron ships in this country on a large scale and to a profit, or his business has been recklessly conducted. Mr. ROACH is not the first great ship-builder who has become virtually, if not really, a bankrupt. The famous firm of NAPIER & SONS, on the Clyde, the foremost of the first generation of iron ship-builders, failed through taking injudicious contracts, and yet it could not be argued from their mishaps that ship-building could not be profitably carried on in Great Britain. As most of the ships built by Mr. ROACH were for the coast trade, he came into competition, in bidding for their construction, with native builders only, not with foreign yards, and therefore there was no necessity to take contracts at unprofitable rates. We are inclined, therefore, to attribute his collapse to bad business management. It can not fairly be used as an argument for or against free ships.

WE seem to be passing through an epidemic of Indian troubles. The first outbreak of the disease was in Arizona, among the Chiricahua Apaches; but it spread to Colorado among the Utes, and now is most violent among the Cheyennes in the Indian Territory, and their brothers, the Northern Cheyennes in Montana. The germs of the disease lie as an inheritance in the restlessness of the Indian's character, but an exciting cause may generally be found in his circumstances and surroundings. The acquisitiveness of the great cattle ranchers, and the love of fight of their armed servants, the cow-boys, have probably somewhat to do with the discontent of the Utes and Cheyennes; but the Apache outbreak must be attributed to the unconquered strength of the savage habits of the Chiricahuas. We make this distinction between this family and the

whole nation of the Apaches; for it would be almost as unjust to hold the whole American nation responsible for the barbarities perpetrated by a band of Western ruffians as to charge the whole of the Apaches with the crimes of the Chiricahuas. In reality, the Apaches as a nation were thoroughly defeated by CROOKE in 1872, recognized the helplessness of further struggle, submitted, and have not been moved to revolt since then by even the maladministration of the Interior Department. The Chiricahuas alone at that time, despite General CROOKE'S remonstrance, were assigned a reservation in the Chiricahua Mountains, on the extreme southern frontier of Arizona, whence they could raid Mexico without molestation. They made good use of their position, devastated for years the States of Sonora and Chihuahua, and became more and more audacious and skillful, and not less sanguinary than when in their pristine state of savagery. After using for years the United States frontier as a base of operations against Mexicans, they reversed their policy and made their stronghold on the Sierra Madre, raiding thence Arizona and New Mexico. Their regularly recurring raids became so intolerable that, two years ago, CROOKE, with a force almost entirely composed of friendly Apaches, followed them into the heart of the Sierras. What transpired there is variously interpreted.

According to CROOKE, his intended surprise of the Apache camp was frustrated by the accidental discharge of a scout's rifle. At any rate, when he did occupy the camp, he captured only some women. These became the ambassadors, and the results of his diplomatic efforts were, that the Indians promised to follow him to the San Carlos reservation, and he promised to welcome them and let by-gones be by-gones. CROOKE'S detractors pretend that the Indians captured CROOKE, not CROOKE the Indians, and that he bought his release by promising a general amnesty. Be that as it may, the old general performed an heroic feat, and succeeded in impounding the whole band of murderers, and in inducing the government to keep the pledges he had given them. A further pledge, however, to the people of Arizonia was implied, namely, to secure the Indians when caught, and this CROOKE has unfortunately failed to keep.

In March, some of these same Apaches, supposed to be about 175 in number, under GERONIMO, left the reservation with their squaws, broke up into bands, and for three months kept the territories in a state of panic by killing a rancher here and a miner there, leaving the print of their moccasins where least looked for, and generally disturbing the whole trade and industry of two territories. They have damaged mining, not only by killing a number of miners in secluded camps and frightening away from their claims many isolated prospectors, but still more, by impressing the people of the East with the idea that life and property are more insecure than they really are. It is, therefore, not to be wondered at that the people of Arizona have sent a number of delegations to Washington to lay before the Executive and emphasize a number of resolutions, many of them very unreasonable in their terms and unique in their literary construction. The citizens of the Southwest territories have certainly just cause of complaint. A large proportion of the best land is appropriated for military and Indian reservations. The rancher may not feed his cattle on it, the miner must not extract from it even the coal he so much needs and that the Indian certainly does not; and yet in return for this large military reservation, the army can not keep as prisoners less than 200 Indian criminals; and it would seem that the White Mountain reservation is so large that this little band of cut-throats, when turned loose upon it, can not be watched.

The irritation of the people of the Southwest is, therefore, certainly well founded; but how to relieve them of their grievance is the same serious puzzle that has bewildered the country since the Pilgrims first set foot on the Plymouth Rocks, and came face to face with the red man.

The Indian question, though less important to the country at large, is as intangible as the negro question.

The remedy proposed by Arizonians of the extreme left is wholesale slaughter of all the red men; but as the red men vastly outnumber this section of society, the operation would be dangerous, and is not likely to be attempted. The more moderate Arizonians propose the transportation of the Apaches in a body to the Indian Territory; but inasmuch as the Apache disapproves of that policy, the army of the United States will have to be recruited before it can be carried out. The true remedy lies in supplying the Indian with the means of supporting himself and teaching him to live side by side in healthy rivalry with the white man, not in fostering race distinction by isolating the Indian on his reservation, and excluding the white man from mines that the Indian does not work and pastures that he can not occupy. The policy of isolation is not necessary.

There are on the San Pedro River in Arizona bands of pure, unadulterated Apaches, who are becoming rich as cattle ranchers, and whom their white neighbors have ceased to fear and never think of molesting.

Forbidden fruit always tastes the sweetest. Whether, therefore, there be good mines or not on a reservation, and no matter how much unexplored country there be off it, it is a grievance that the reservation should not be open to location.

The creation of thriving mining camps within the reservation, and the market that they would afford for the produce of the Indians' farms and stock ranges would, it seems, be almost necessary for the success of CROOKE'S system, which is to scatter the Apaches over the fertile lands of the reservation, assign them lands in severalty, thus render them self-supporting, and at the same time break up their tribal relations.

At present, the exclusion of the miner from the White Mountain region in Arizona is particularly irritating. The territory needs cheap fuel for the reduction especially of its copper ores. Coke for the purpose is brought around the Horn to San Francisco, freighted thence over one thousand miles of railroad by the Southern Pacific Railroad, while extensive beds of coking coal are supposed to lie in the heart of the country, though unfortunately within this reservation.

The Indians do not own the coal and do not mine it, but consideration for their very susceptible feelings compels the government to allow no one else to do so. The government is doubtless right, and the military unquestionably so, in preventing any act that might irritate these swarms of human wasps. Under existing rules, the reservations are sacred to the Indian's use, and no white man has any right within their limits. But it does not follow that such rules are either wise as they affect the red man or just as they affect the white.

CORRESPONDENCE.

[We invite correspondence upon matters of interest to the industries of mining and metallurgy. Communications should invariably be accompanied with the name and address of the writer. Initials only will be published when so requested.
All letters should be addressed to the MANAGING EDITOR.
We do not hold ourselves responsible for the opinions expressed by correspondents.]

The Water-Jacket Furnace.

EDITOR ENGINEERING AND MINING JOURNAL:

SIR: The original inventor was the first mechanic who used water about the fire-box of a locomotive for the preservation of the iron or copper work.

The first water-jacket furnace, I think, is of prior invention, namely, American. It was the common lead miner in Galena, Ill., who used a true water-jacket furnace hearth, and every thing afterward was only an adaptation of this. No doubt the name of the inventor, if he ever claimed to be one, has been forgotten. A. HARNICKELL.

NEW YORK, July 18.

[See last paragraph of "Notes from Colorado," in this number of the JOURNAL.]

EDITOR ENGINEERING AND MINING JOURNAL:

SIR: Kerl's *Grundriss der Metallhüttenkunde*, 1873, page 133, speaking of smelting copper ores, mentions the California furnace. He says: "The furnace consists of two cylinders, the one set inside the other. The space between the two cylinders is filled out with fire-proof material in its upper parts, but about the hearth water circulates between them." He cites the *Berg- und Hüttenmännische Zeitung*, 1866, page 316, for a fuller description.

If the smelters interested in proving the use of the water-jacket prior to the date of the patent under which royalty is claimed will look up this article and its source, it will furnish them the data they want.

Yours truly, CHARLES M. ROLKER.

No. 25 BEAVER STREET, NEW YORK, July 22.

Mining Leases.

EDITOR ENGINEERING AND MINING JOURNAL:

SIR: Please convey to "H. F." my thanks for his efforts to enlighten me in regard to mining leases, as published in your issue of July 11th. But the leases wanted here are very different from those used in Colorado. Here, the owners of the land generally know but little or nothing about mining, and do not care to engage in it. In many cases, the owners are residents of other States, and purchased the lands for timber, or without any knowledge of their mineral values.

What we need is something similar to our iron ore leases, which give the lessee full possession of the property during the life of the lease, generally twenty years, the lessor receiving a stated royalty for each ton of ore shipped. The difficulty of adapting our iron ore leases to gold and silver is in defining in the lease a sure and practical method of determining the product on which royalty shall be paid.

In the case of iron ore, the freight bills of the railroad company transporting the ore to market are used to determine the tonnage; but in the case of gold and silver, no practical and efficacious manner of checking against fraud has been found, so far as I am informed, and I have investigated the matter quite thoroughly.

The royalty must, of course, be a percentage of the gross product of the mine, but the difficulty is to know what that percentage should be. At present, the generally accepted rate is ten per cent, but it is positively asserted by many that the rate is too high. This matter, however, will regulate itself as the business develops, and if ten per cent is too high, a rate will be made that is fair to all concerned. The rate of royalty will in the end depend upon the richness of the veins, the cost of working, etc. The chief difficulty, therefore, in our case, is the means of providing for a "fair count." So far, the most practical arrangement I have seen is a lease providing for a sworn monthly statement by lessee to lessor, giving the amount produced in the previous month, the penalty for a false or erroneous statement being the forfeiture of the lease and all of lessee's rights thereunder. This arrangement will probably be the most effective one for our use in this district. The operations of mining and

reducing gold and silver will generally be carried on by corporations, and false or erroneous statements could only be made by means of conspiracy with clerks and other employés, which no corporate management could afford to undertake. J.

MARQUETTE, MICH., July 17.

BROWN HEMATITE ORE MINING.

Written for the Engineering and Mining Journal by H. M. Chance, Philadelphia, Pa.

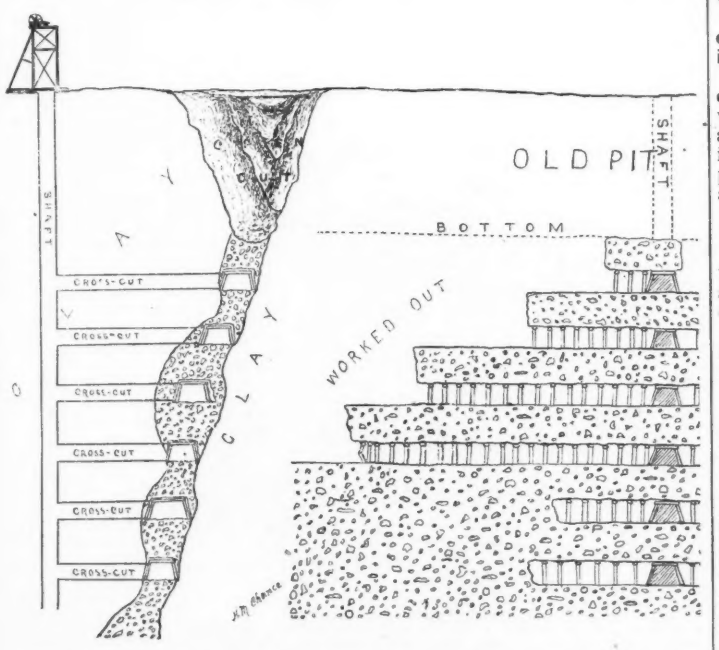
Year by year, the cost of mining the brown hematite ores, so largely used in Pennsylvania and the adjoining States, is increasing rapidly, and in some districts the growth of the output suffers a serious check from the increased depth of the mines. Worked in the ordinary way by open pits, the depth to which any and every mine can be worked must have an absolute limit dependent chiefly upon the thickness of the ore-bearing (workable) strata, the relative coherence of the material forming the sides of the pit, and the market price of ore.

A very large number of what were at one time considered excellent mines now lie idle and abandoned, not because the ore is exhausted—for in very many cases the ore in the bottom is as thick and as good as that found in any other part of the pit, if not better—but because the workings had become so deep that the cost of removing enough material to keep the sides of the pit in a safe condition was so great as to make the cost of the ore excessive.

If, for the purpose of illustration, we assume the shape of an ore-pit as a straight cut with inclined walls, we find that the amount of material that must be removed to keep the sides safe increases as the square of the depth. Thus, if the material removed from the pit when only ten feet deep was 1000 cubic yards, we find that the amount to be removed will be, for each succeeding ten feet, as follows :

10 feet to	20 feet	3,000 cubic yards.		Total to 20 feet		4,000 cubic yards.	
20 " "	30 "	5,000 "	"	" "	30 "	9,000 "	"
30 " "	40 "	7,000 "	"	" "	40 "	16.000 "	"
40 " "	50 "	9,000 "	"	" "	50 "	25,000 "	"
50 " "	60 "	11,000 "	"	" "	60 "	36.000 "	"
60 " "	70 "	13.000 "	"	" "	70 "	49,000 "	"
70 " "	80 "	15.000 "	"	" "	80 "	64,000 "	"
80 " "	90 "	17,000 "	"	" "	90 "	81,000 "	"
90 " "	100 "	19,000 "	"	" "	100 "	100,000 "	"

The quantity of dead material to be removed to mine the ore lying between fifty and one hundred feet in depth will then be three times as great as the material removed in mining out the ore lying between the surface and fifty feet in depth. As this material has also to be raised from greater depth than that first removed, the cost of handling it will also be greater. When we add to this the material that must be removed from the *ends* of the pit also, we shall probably find that the cost of uncovering this ore from fifty to one hundred feet in depth will be fully four times as great as for the first fifty feet.



If the furnaces of Central Pennsylvania are to be supplied with cheap brown hematite ores in the future—and it is becoming evident that they can not hold their own without cheap ore—very cheap ore—it seems certain that the present method of working these mines by open pits must be abandoned, and the ores mined underground like other metalliferous deposits.

The principal difficulty to this is found in the fact that in most cases the ore is found imbedded in clay, and that both the foot-wall and hanging-wall are of the same general character to very considerable depths, if not indeed to the extreme limits to which the ores extend beneath the surface. With such material for a hanging-wall, it is evident that, in any system in which pillars of ore are left to support this hanging-wall, the cost of the ore mined will be greatly increased by the very large quantity lost in these pillars. It is also evident that no system can be successful in which the ore is replaced and the ground held in place by "square sets" of timber (as in gold and silver mining), as the cost of the timber will be excessive.

The yielding nature of the ground also prevents developments at considerable depth, such as might be made with good walls by leaving a thick chain-pillar immediately beneath the bottom of the old open pit workings, as no such pillar would remain in place after the ore beneath it was taken out, except in very thin veins.

To mine these ores successfully and cheaply, it seems necessary to begin in the upper part of the ore-bed immediately below the bottom of the old open pit work, to take this ore out, then to take out another "lift," and as each lift is removed, to allow the loose material in the old pit and the whole surface to settle down, making no attempt at holding it in place.

This system has recently been successfully tried at the Zeigler mine, near the Berks-Lehigh county line, under the supervision of Mr. Edwin Mickley, superintendent of the mines of the Thomas Iron Company. The mine had been abandoned by the former operators, who did not think it possible to continue mining, as the pit had reached great depth, and the ore-body did not appear to warrant the removal of the great mass of material necessary in prosecuting work in the old way.

In the absence of a map of the mine, I have made the accompanying sketch, which is not intended to represent the exact condition of the workings, but is drawn to show the principal features of the plan as here used. Of course, there is nothing new in this plan ; but its application to this particular branch of mining and to the conditions here present is rather novel.

A shaft is sunk in the hanging-wall, care being taken to locate this at a sufficient distance from the old pit to avoid the risk of disturbance caused by the ground settling as the ore is removed.

At distances of 20, 30, or 40 feet (as may be found best), cross-cuts are driven to the ore-bed, and from each cross-cut a gangway ("levee") is driven right and left in the ore-bed to the distance it is proposed to mine. These gangways are very heavily timbered throughout. They are driven from six to eight feet high, and eight, ten, or twelve feet wide, according to circumstances.

When the cross-cuts are rather long, one cross-cut may be used to take the ore from two or three levels by driving chutes to connect the levels down which the ore may slide from one level to another. The cost of driving so many cross-cuts may thus be lessened, and the ore handled with greater facility, as can always be done when all the ore is raised from one level.

Mining is begun at the "far end" of each gangway—the upper gangway first—and all the ore is removed, the loose surface *débris* being allowed to settle down upon the ore forming the floor of the level. As the ore is mined, the timbers are withdrawn, to be used again in the lower levels. The miner always has a safe retreat in the timbered gangway, every thing being kept perfectly safe up to within a few feet of the working face.

The second and third levels are worked in precisely the same way, every thing being taken out, and the surface coming down and filling in the place of the ore.

As greater depth is reached, the whole hanging-wall moves over and closes in upon the workings, closing up most effectually the space from which the ore has been mined and throwing an enormous weight upon all the timber not thoroughly protected by ore. Some very large timber is broken in this way, and some may be lost ; but it is generally found possible to prevent breakage by standing extra props near the loose end, and to recover all of the timber.

The advantages of this plan may be summarized thus :

1. Mines no longer workable as open pits may be reopened and worked.
2. Operations may be carried on throughout the entire year, as is not the case with open workings, which are idle much of the time, on account of the ground being frozen very hard, bad weather, or the occurrence of slips and slides.
3. Only ore, or wash-ore that will pay to handle, is taken out. In open pits, the ore frequently becomes mixed with a large quantity of refuse, which must be put through washer or the ore lost.
4. Great reduction in the cost of mining and preparing the ore.

The sketch shows the first level almost worked out, the second, third, and fourth levels partly worked, and the fifth and sixth levels not yet driven to the limit.

Removal of Incrustations from Water-Mains by Dilute Acids and Soda.—A successful attempt was made last year in Leipsic to remove by chemical means the incrustation that coated the interior of the force-main from the pumping-station to the reservoir. The main is 390 millimeters wide (about 15½ inches) and 4·55 kilometers long, and the incrustation was from 13 to 24 millimeters thick, and in places thicker still. The operations lasted from the 7th of March to the 11th of May, and during that period at intervals the pipe was filled with dilute hydrochloric acid eight times, with soda solution three times, and with a solution of chloride of lime once, being washed out thoroughly with water between the successive applications. It was stated that the incrustation was entirely removed, and the practical effect of the cleaning was indicated by the pressure-gauge, there being a decrease of from 1·8 to 2 atmospheres pressure at the pumps.

Coal-Dust Explosions.—George G. André says : Had the German Commissioners not demonstrated the possibility of bringing about an explosion of coal-dust by the agency of a shot, an accident that happened on the 7th ult. at the Nœux collieries in the Pas-de-Calais, France, might have been adduced as evidence of that possibility. As it is, we may cite the accident as another illustration of the demonstrated fact. It appears that a shot was fired in a working place, the atmosphere of which was laden with coal-dust without fire-damp even in a minute proportion. The result was an explosion of considerable violence, the inflammation of the dust extending upward of 150 yards. Three men, who were at work in the tram road, were killed. This explosion is utterly at variance with the conclusions of the French Commissioners who recently reported on the subject of coal-dust explosions, and strikingly in accordance with the facts observed by the German Commissioners during their experiments at Neunkirchen. At these Neunkirchen experiments, it was observed that a tamping of small coal or a carbonaceous clay greatly lengthened the flash from a blown-out shot. These long projections of flame have been the cause of several serious accidents lately in France. With the view of removing this source of danger, a committee of inquiry has been formed.

THE FRISBEE-LUCOP MILL.

The Lucop pulverizer was introduced in this country and illustrated in the ENGINEERING AND MINING JOURNAL some years ago. It was said to do good work; but its construction was such that some of its parts wore with great rapidity, and thus diminished its efficiency. The machine has now been entirely remodeled under the above title, its desirable features being retained, and its rapidly wearing parts, the journals on which the rollers revolved, being replaced by pushers, easily replaced and less liable to wear. The accompanying illustrations show very clearly the construction of the machine. The following description is given by the manufacturer, the Frisbee-Lucop Mill Company:

This is a centrifugal roller mill, in which the rollers revolve on their axes, and are carried around in a vertical plane on the inner periphery of a heavy ring of hard iron or steel, set vertically inside of a suitable casing, against which they exert a centrifugal force of from 1800 to 2000 pounds each, according to their speed. There are two rollers, which are propelled by curved drivers projecting from the opposite ends of arms keyed to the main shaft, and held in place by a pair of disks that are bolted to the arms on each side. This form of construction allows the rollers to lie loosely in place, and to move from the face of the ring toward the shaft so as to pass over pieces of iron or steel that may accidentally enter the mill. An automatic feed is attached, and every mill is complete and ready for the belt when shipped. The wearing parts, which are the ring, rollers, and drivers, weigh altogether about 700 pounds, require no fitting, and are readily replaced when worn out. The amount of wear of these renewable parts depends upon the hardness of the material ground; but the loss will, in any case, be less than in stamp mills on the same substances, as there is no loss by breakage. All substances, of whatever kind, when ground, leave the mill in a finished state, their fineness depending on the number of the screen used, or the velocity of the air current, when the latter is used, and there are no tailings to be returned to the mill for regrinding. The casing on each side of the mill is divided by a vertical screen of suitable fineness, set transversely to the shaft. Inside of the screen on each side, a propeller fan is attached to the shaft, by which the material, as fed into the mill, is distributed around the inner periphery of the ring, in the path of the rollers, insuring an equal amount of work at every point on the face of the ring. Outside the screens, is another pair of propeller fans, which cause a current of air to pass outward through the screens, and discharge the finished product through a chute that passes downward through the bed-plate, from the casing on each side of the mill. Where the product is taken from the mill by a current of air, as in grinding phosphates, mineral paint, carbon, or other substances, the screens are left out, and the dust is taken from the mill through pipes connected with the top of the casing, and carried to a chamber prepared for it, by an exhaust-fan or other method of causing a current of air to pass through the mill. In this case, there are openings in the bottom of the casing for the admission of air. The casing is divided horizontally, and the upper and lower halves are held together by hinged bolts in slots cut in the flange of each section. The upper half is hinged to the lower, at one side, and is easily raised so as to give free access to the interior of the mill for examination and replacing worn parts.

Referring to the cuts, Fig. 1 shows the mill closed; Fig. 2, with upper half of the casing raised, showing the ring in place, one of the disks partially broken away, exposing a portion of one arm, a roller and driver, and also the propeller fans. Fig. 3 is a vertical transverse section through the ring, rollers, drivers, arms, etc., fully showing the automatic feed.

The reference letters show: *A*, bed-plate; *B*, casing; *C*, *C*, *C*, *C*, keys that hold the ring *D* in place, and by which it is adjusted to position; *D*, ring; *E*, *E*, arms; *F*, *F*, drivers; *G*, *G*, rollers; *H*, opening through which the rock is fed to the mill; *J*, cam on feed-shaft, which strikes the tappet *L*; *K*, feed-shoe; *M*, adjustable screw for graduating the feed; *N*, hand wheel by which the screw *M* is turned; *O*, suspension-rods for *K*; *P*, a spring, which bears against the tappet *L*, and throws the feed-shoe back to its place after the cam passes the tappet.

The weight of the mill is about 5500 pounds. The inner diameter of the ring is 24 inches, and width of face of ring 6 inches; the drivers are 6 inches wide by 4 inches thick; the rollers, 8 inches diameter by 6 inches face; weighing 80 pounds each. The main shaft is of steel, 3 inches in diameter, with bearings 10 inches long and 3 inches diameter. The speed in running should be 300 revolutions a minute, at which rate the mill will grind 2000 pounds an hour of quartz to 60-mesh powder, and up to 4000 pounds of softer material, requiring from 12 to 18 horse-power, according to hardness of material ground and speed of the mill. The material to be ground is first passed through a crusher to a size of one inch or less, as may be convenient, and then fed by a chute directly on the feed-shoe. The screen mill can be used for either dry or wet grinding, and the only change necessary for wet grinding is to introduce the necessary amount of water into the feed opening in the top of the mill. This is a valuable feature, as it removes the necessity for drying rock before grinding, when the pulp is to be worked wet, by concentration or amalgamation, as it can be run directly to concentrators, pans, or plates. These mills are in use by the Atlantic Phosphate Company, the Wando Phosphate Company, Williams & Co., and others in Charleston, S. C.; by E. Frank Coe, New York; T. R. Keator & Co., High Falls, N. Y. (where the mill has ground seventeen barrels of Rosendale cement an hour); and by other firms of well-known standing.

The advantages of this mill are, that it finishes its work at a single operation and to any desired fineness, and that it is simple in construction and has few parts liable to breakage. It is, evidently, better suited to crushing for amalgamation than for concentrating.

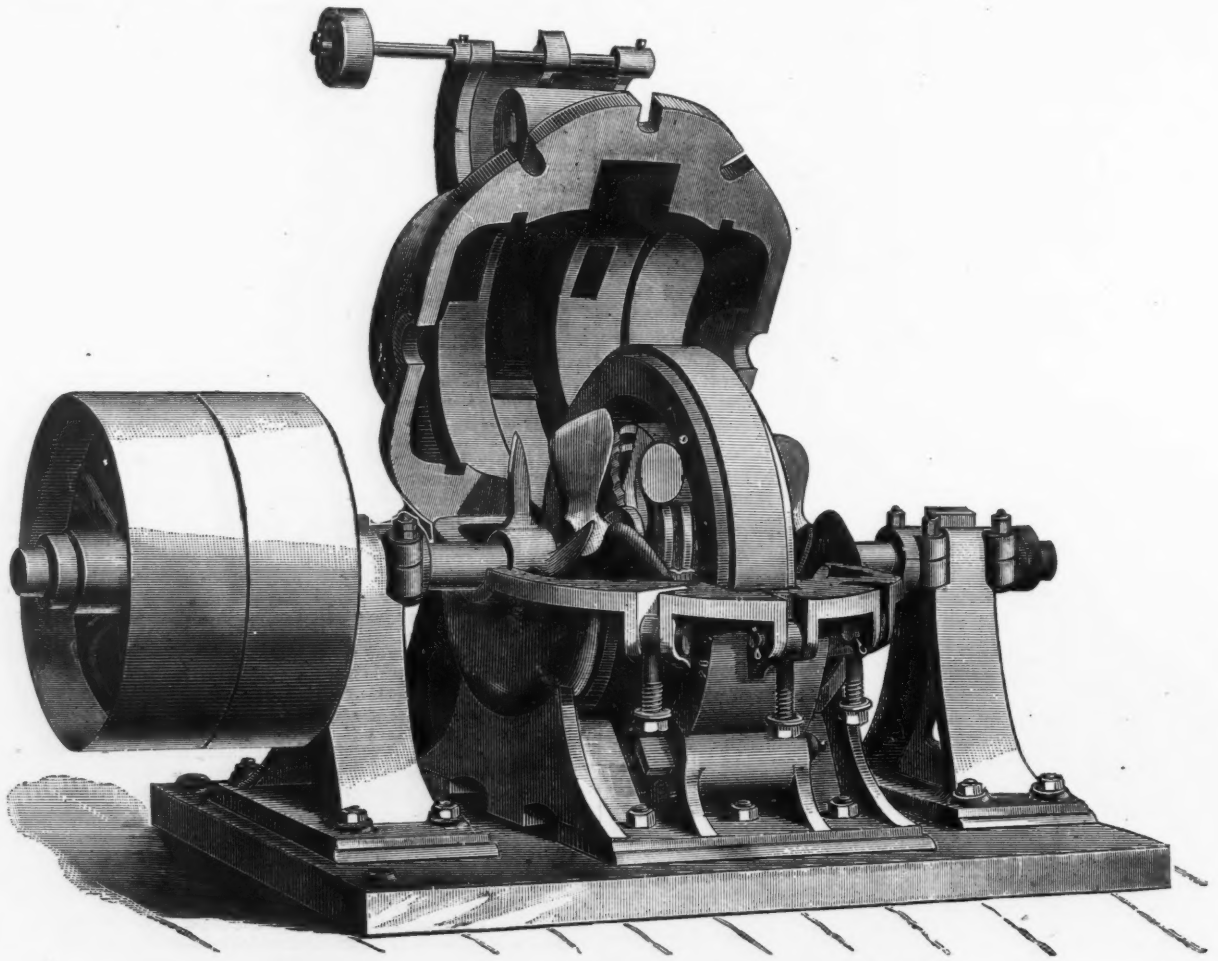


Fig. 2.

THE FRISBEE-LUCOP MILL.

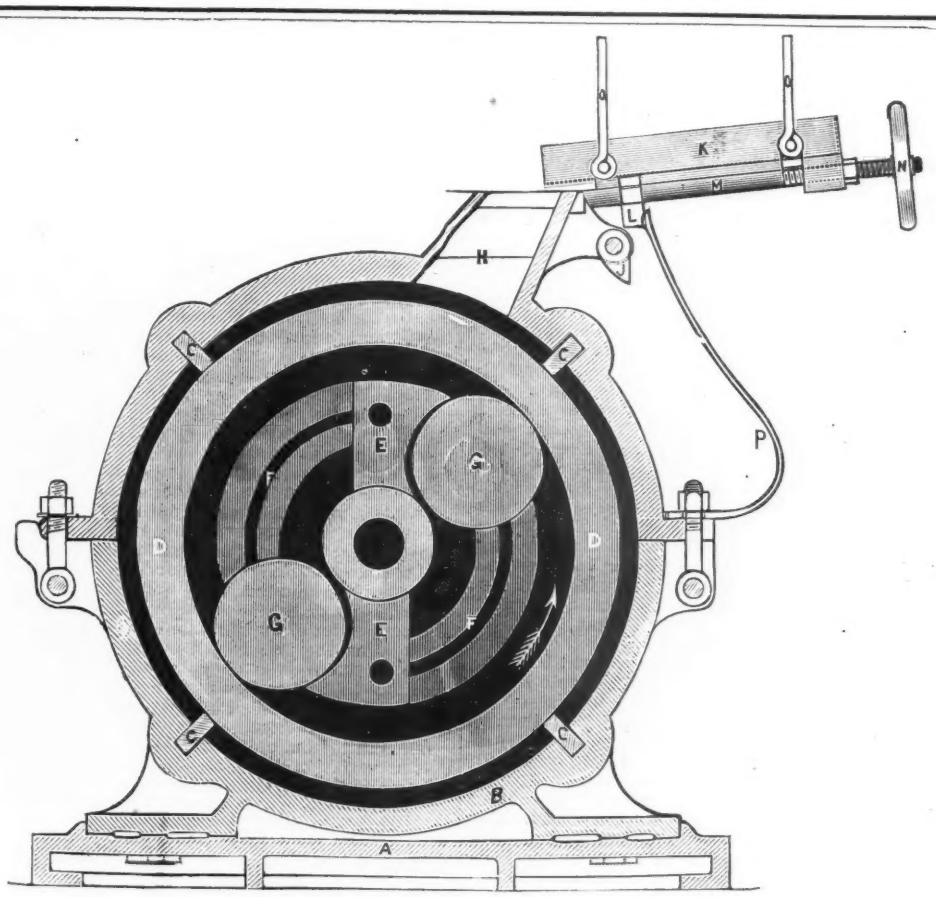


Fig. 3.

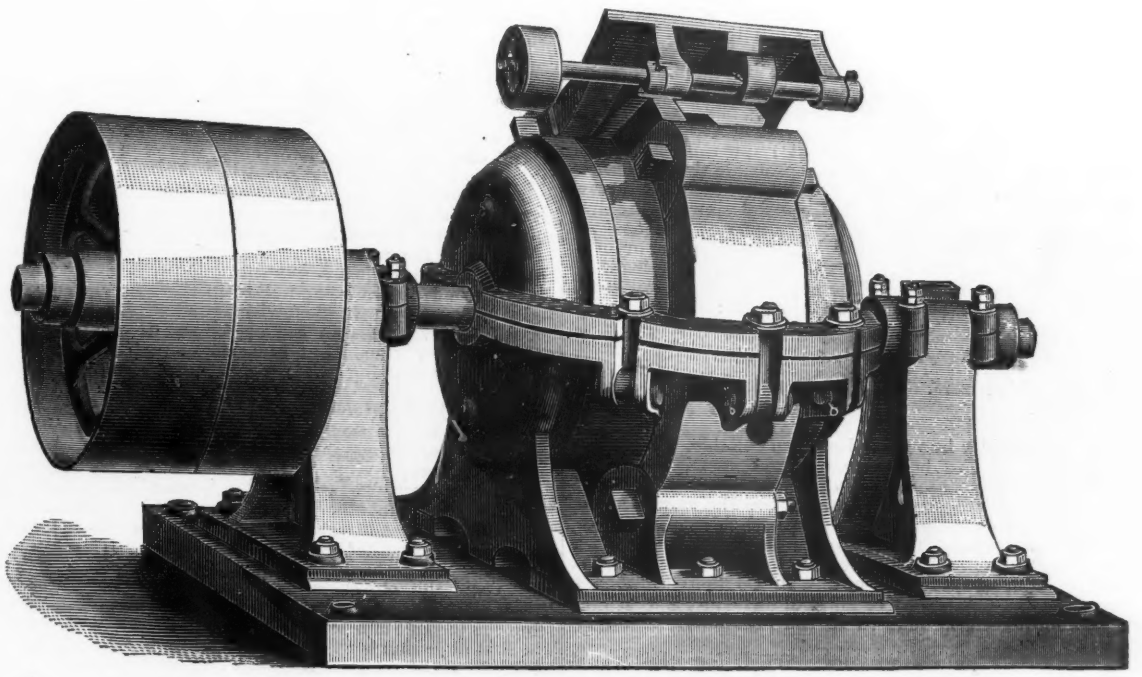


Fig. 1.

THE FRISBEE-LUCOP MILL.

The Pennsylvania Geological Survey.—The plans of the Pennsylvania State Geologist, Prof. F. P. Lesley, for continuing the Geological Survey of the State for two years, have been approved by the Board of Commissioners of the Geological Survey.

Dispersing Lithofracteur Fumes.—The Secretary of Mines has received a report from Mr. John S. Reid, manager of the New Bendigo mine, New Bendigo, Australia, which gives valuable testimony to the efficacy of sulphate of iron spray in dispersing and rendering innocuous the fumes of lithofracteur used for mining purposes. He has tried it with dry, ill-ventilated workings, and finds that it answers admirably, and the men seldom complain of the fumes now. At the recent deputation to the Minister of Mines, which asked for a prohibition of the use of lithofracteur, on account of the danger from the fumes, it was asserted that the spray was only of a limited efficacy, on account of its circumscribed application; but this has been shown by experiments to be erroneous, and the spray is a great acquisition in all mines where lithofracteur is used. A second trial of the sulphate of iron spray in counteracting the effect of dynamite fumes was recently made in Lazarus No. 1 mine, Sandhurst, by Mr. Grainger, inspector of mines. Three shots were fired in an ill-ventilated drive at the 1300-foot level. About one and a half pounds of the composition, dissolved in an ordinary bucket of water, were thrown from the syringe among the fumes, with the result that they were sufficiently dispelled to enable the men to resume work in from nineteen to twenty-one minutes. There is no doubt, however, that in shooting down, a large portion of the smoke is confined below the ground dislodged, to which the spray can not be conveyed. After the previous test, the men engaged in the drive said that they felt the effects of the fumes that arose from the disturbed mullock. Mr. Grainger will report to the Mining Department the results of the test.

MODERN AMERICAN METHODS OF COPPER SMELTING.*

By Edward D. Peters, Jr., M.E., M.D.

CHAPTER VII.

CRUSHING MACHINERY.

The crushing machinery used for the purpose under discussion may be divided into two classes:

1. For preparatory crushing: Jaw-breakers of various patterns.
2. For final pulverization: Stamps, Ball pulverizers, Chili mills, various patent pulverizers and grinders, Cornish rolls.

I. Machines for preparatory crushing.—The jaw-crushers in almost universal use are eminently satisfactory as regards economy, capacity, and general suitability to the purpose for which they are intended. A few deductions from long-continued trials of almost every well-known pattern of breaker may be useful. Ordinary prudence will suggest to the inexperienced the choice of some form of machine long and favorably known to the public, and nothing can be more foolish than the selection of some novel and much vaunted but untried apparatus.

A machine should be selected that has stood the test of years and is manufactured by some well-known and reputable firm. Light-built machines should be particularly avoided, as the strain exerted upon certain parts of every breaker, especially when clogged with clayey ore and set to crush fine without shortening the stroke of the jaw, is something enormous, and only to be successfully encountered by the superabundant strength in every portion of the apparatus. This is well exemplified in the breakers turned out from the foundries of those manufacturers who have long made a study of this particular business, and who have gradually added an inch of metal here and a half-inch there, as time and trials have developed the weak points of the machine, until it may appear bulky and clumsy beside the light and elegant models of some of their later competitors. Unless ore is delivered to the smelter in unusually large lumps, the 7 by 10-inch jaw-breaker will be found most convenient for general work, and not so heavy as to demand special arrangements for its setting-up. (These figures refer to the size of the opening between jaws—the smaller number indicating the distance between the fixed and movable jaw, while the larger gives the measurement at right angles to this.) Such a machine can be set to break to a maximum diameter of three quarters of an inch, and has a capacity equal to any ordinary demands, although varying greatly with the size of the discharge opening and quality of the material crushed. The setting-up and management of this machine are matters of too universal knowledge to require further attention; but it may not be generally understood that the substitution of smooth jaw-plates for the corrugated ones usually employed will greatly increase the proportion of fines in the product.

As the ore usually passes directly from the breaker to the rolls—better with the interpolation of a short screen to remove such as is already sufficiently fine; and as in fine crushing the capacity of the breaker, even when set up to its closest practicable limits, usually greatly exceeds that of the rolls, a decided increase in the work performed can be most economically and easily effected by introducing a second fine breaker between the coarse crusher and the final pulverizer. This machine may be of quite light construction, should have a very long, narrow jaw opening—say 2 by 12 inches—a slight "throw," and move at a high speed.

It is in this direction that the most important improvements in fine crushing machinery may be looked for, and it is probable that the crushing and, still more important, the discharge area may be most advantageously increased by the employment of a multiple-jawed machine. This apparatus—when used merely as an intermediate crusher—will reduce the product of the coarse breaker to the size of corn, or even smaller, thus greatly lightening the work of the finishing pulverizer.

II. Machines for final pulverization.—The apparatus at all suited for this purpose may be brought under the following heads:

Stamps.
Ball pulverizers.
Chilian mills.
Miscellaneous patent pulverizers.
Multiple jaw-crushers.
Cornish rolls.

Stamps, although universally known and always reliable, produce far too great a proportion of fine dust, besides being unnecessarily expensive, both as regards first cost and subsequent running.

The Ball pulverizer, when properly constructed, has the merit of compactness, slight cost, economy in running, and several other advantages, but is of insufficient capacity, and, like stamps, is better calculated for the production of fine pulp than of the material required for calcination.

Chilian mills have obtained a strong foothold in England for certain metallurgical purposes, but are expensive and cumbersome, have a very small capacity, and are peculiarly adapted to the production of impalpable dust.

The miscellaneous patent pulverizers now offered for sale would require a considerable space for their enumeration. In many cases, they possess much merit; but although differing to an extreme in almost every other particular, are pretty well united in producing a pulp containing too much dust in proportion to the granules.

Multiple jaw-crushers have already been referred to as promising much for the future. Their construction admits of an enormous area of discharge opening, and since the breaking of each fragment of rock is accomplished by the approach of two opposing surfaces, which yet can never meet, all particles sufficiently fine are at once removed. There is reason to hope and expect that these machines will soon be perfected; in which case, nothing yet invented could be better suited to the production of just such material as is demanded both for concentration and for the variety of calcination now under discussion.

Cornish rolls.—No other class of machines can compare with the Cornish rolls for capacity, economy, and certainty, in crushing every variety of ore and matte for the purpose just indicated. But inasmuch as the various patterns of this machine differ almost as much among themselves in efficiency and capacity as they do from the other pulverizers already mentioned, and as an examination of a large proportion of the roller plants in actual use at the present time in this country indicates a great want of care in both construction and management, and a tendency to be satisfied with a considerably lower standard of excellence than might easily be attained, it seems desirable to draw attention to such points as seem to particularly demand supervision or reformation.

Rolls should be ordered only from the best makers, who can refer to numerous similar machines of their manufacture in long and successful operation, nor should the metallurgical engineer forget that much of the work for which rolls are made, and in the performance of which they give perfectly satisfactory results, is for phosphates, gypsum, lead ore, or similar soft or brittle substances, whose crushing bears no relation to that of the low-grade matte and tough quartzoze—or hard pyritic—ores that are generally the object of calcination. Certain low grades of matte, especially when produced in blast-furnaces, contain a large proportion of various indefinite compounds of copper, iron, and sulphur that are almost malleable, and would inevitably destroy any of the ordinary light-weight, low-priced rolls so frequently considered sufficient for general purposes, and occasionally placed in metallurgical establishments with mistaken notions of economy.

The most important proportions to be noticed in the type of rolls required for the purpose under discussion are, great diameter of the body of the roll in proportion to its face—2½ or, better, 3 to 1; great strength of axle, which may be with advantage one quarter of the total diameter of the roll, including shell; great length and rigidity of bearings, which may be of Babbitt-metal, or, still better, of brass; proper size and weight of fly-wheels, and a general strengthening and reinforcement of all parts of the machine that are found weak or doubtful on comparison with the increased capacity of the portions just named. The frame in particular will require a decided augmentation of strength to correspond with the additions enumerated, and may advantageously be cast in separate halves, to avoid the inconveniences arising from its bulk and weight. The best material for the roll-shell, as well as the most convenient means for holding the two massive rolls in apposition, while provision is yet made for the passage of any infrangible or incompressible substance, are questions that have drawn out a variety of opinion and practice

Two varieties of shell only demand consideration for the crushing of hard ores and mattes.

1st. White iron, chilled to the depth of nearly an inch, and so evenly that no variation in wear is detected on the surface after the passage of a thousand tons or more of the hardest material.

2d. Soft steel, such as is produced by the Siemens-Martins method at a very moderate cost.

Such chills as are here indicated, and as are alone satisfactory in practical work, can only be obtained by careful manufacture, and the ordinary chilled shells advertised as perfectly satisfactory by the greater number of manufacturers are comparatively worthless, and a source of constant annoyance and expense. A pair of chilled shells of 36-inch diameter, 14-inch face, crushed approximately 22,000 tons of medium ore, taking it from the fine breaker, 1½ inches, and reducing it to about five eighths of an inch in size, before being worn out, the chilled surface wearing smoothly and regularly away to the depth of over half an inch before any notable irregularities appeared.

It is always advantageous to have all the rolls in use in any establishment of the same diameter and make, as in this way a very great saving is effected by using all new shells for fine crushing, and when too much worn to yield economical results in this situation, to pass them on to the coarse crushing rolls, where they may perhaps serve an equally long time before being finally discarded.

It is by no means generally known that the hardest chilled iron may be turned with an ordinary tool without difficulty if a sufficiently slow motion is made use of in the process.* In this way, a set of shells may be preserved in condition for fine crushing for a much longer period than is usual, as the shells are almost invariably incapacitated for this purpose by their tendency to wear hollow in the center. This fault may be partially obviated by a simple device by which the stream of ore as fed to the rolls is diverted from the center and directed to the lateral portions of the roller surface; but is much more immediately and effectually remedied by turning the surface smooth under the precautions just indicated.

Steel shells also give excellent satisfaction, and are quite easily turned, as only soft steel is used in their manufacture.

No one who has watched the constant jumping of all ordinary rolls, with the accompanying separation of the opposing surfaces, and has noted the inevitable escape of a pound or more of coarse material through the crevice thus formed, can doubt the increase in capacity that would arise from the rigid fixation of the crushing surfaces at such a distance from each other that nothing could pass between them without being reduced to the desired size. Any proposition to this effect is usually met with the objection that the rolls would frequently become "stalled" for want of power, or else that constant breakages would arise from the passage of a bit of steel or some similar infrangible substance. The first objection is too trivial to require notice, while the second may be met in various ways: By either increasing the strength of the springs, by which the rolls are maintained in apposition, to such an extent that no substance capable of being crushed with detriment to the machine can pass them without being crushed; or by abolishing springs entirely, and providing some weak point in the apparatus that shall break before the strain becomes dangerous to other and more expensive parts.

Both of these methods are in satisfactory use; the latter, however, being suited only to fine crushing; the employment of a thin cast-iron breaking-cup renders its application simple and economical; while the former improvement is best effected by the use of strong duplex steel car springs, or heavy rubber springs, which are in use at many places, giving almost universal satisfaction.

(TO BE CONTINUED.)

Marls.—In New Jersey, about 875,000 tons, worth $437,500 at the pits, were dug in 1884. In addition, small quantities were produced for local use in some of the Southern States. The production is declining, owing to competition with fertilizers made from phosphate rock, etc.

* Copy-right, 1885, by the Scientific Publishing Company.

* The author desires to acknowledge his indebtedness to Mr. Franklin Farrel, of Ansonia, Conn., for this important point in the manipulation of chilled iron, as well as for many novel and useful suggestions in connection with rolls and crushing machines.

NOTES FROM COLORADO.

From Our Traveling Correspondent.

Midsummer has come again, and again it is without the revival in mining matters that some people have hopefully looked for for two or three years past. But the cry of dull times in Colorado has less to rest upon than in most other parts of the country. The State has two great industries, mining and stock-raising. The latter is certainly still very profitable, and need not be spoken of further here. But mining is profitable as well, in these days of quiet, systematic production, although the exciting times of Leadville at its fever-heat are forever past. It is the disinclination to realize this fact on the part of people who remember Colorado as it then was that leads to a feeling of dull times. Business was then in an abnormal state. The wonderful production of Leadville, with the inadequate means of doing its business, brought more people to Colorado than have been needed since the construction of its mountain railroads, facilitating and systematizing transportation. And until people get thoroughly accustomed to a more normal state of affairs, dissatisfaction and complaining must continue.

Leadville still maintains a good output, and all the old camps of the State keep up production—Central City, Black Hawk, Georgetown, Idaho Springs, Boulder, Alma. And, in addition, there are the newly developing camps and portions of the State. There is the rich San Juan country, to which one of the branches of the excellent Rio Grande Railroad system furnishes an outlet, each year largely increasing its production. Two of its mines, the Yankee Girl and the Old Lout, are of themselves sufficient to call to that region the attention of the mining world. The Gunnison country is another of the newer portions of the State. It is a rapidly developing mining district, but it has been "boomed" too much. There are a number of paying mines—enough to keep a local smelting-works in operation this season, besides sending some ore to the valley works. But it has been the misfortune of the district that speculators and enthusiasts have been able to build more of a city at Gunnison than the district can at present sustain, and there is continual complaint that the place is played out. The trouble, however, is not with the district, but with the people, for building a city before developing the mines. The Breckenridge District, which came forward last year with a mining boom, is this year enjoying quiet but substantial prosperity. A half-interest in the Elephant mine, adjoining the Ontario of wire-gold fame, sold some time ago for $125,000. Even the Kokomo District is looking up and shipping excellent ore. It really seems as if the Robinson Consolidated is to redeem itself: for it has been shipping considerable 50 to 75-ounce ore the present season—something unheard of since its early days.

The Terrible mine, in Custer County, was recently sold by Wahl Brothers, of Chicago, to the Omaha & Grant Smelting and Refining Company. It is said to be an immense fissure-vein, variously stated as from 50 to 120 feet in width, carrying from ten to forty per cent of lead as carbonate, but only traces of silver. Suitable concentrating machinery is to be put in, to free the cerussite from a porphyry gangue occurring with it. The price is said to have been $110,000, and it is expected that hereafter the smelting company will be very independent of outside sources on the lead question.

Last to be mentioned is Aspen, but little heard of till last winter. It has been extravagantly called a second Leadville. But it has half a dozen mines producing large quantities of high-grade silver ore, and the camp is not yet thoroughly prospected. The ore carries some lead, but usually not in the easily smelted carbonate form, as was the case with the Leadville surface ores. If oxidized ore, it is mostly sulphate, otherwise sulphide. Zinc is a troublesome constituent, averaging, it is estimated, from eight to fifteen per cent. A smelter has been in operation for a year past, and there is great need of a railroad to bring in outside ore and fluxes to make proper smelting mixtures, to market the excess of ore, and to furnish supplies. Steps have already been taken in this direction. A company has been organized with D. H Moffat, Jr., President of the Rio Grande, as president, to build a narrow-gauge railroad to some point on the Rio Grande. Three routes have been examined, but they are all either difficult or roundabout. Which will be chosen has not been determined. Communication with the outside world is now had by coach for passengers and by wagon and pack trains for ore, according to the state of the roads, by the way of Granite, a station 48 miles distant on the Rio Grande Railroad. I have seen and heard many statements regarding the output, but have been unable to get trustworthy estimates. The statement comes from a man who is in a position to be well informed, that there is enough shipping ore now mined to keep teams hauling to Granite for a year at the rate of from 20 to 30 tons a day; besides this, the smelting-works are said to have a stock worth over half a million. With a railroad built, the ore already mined and not to be smelted at Aspen would be available at once for the valley smelting-works. As it is, the cost of freighting to Granite is excessive, and there is little inducement for activity at the mines. Two of the mines also, the Aspen and the Emma, are in litigation, causing a cessation of production.

Some of the Denver business firms report business dull and others good. The Colorado Iron-Works have not had as many orders for two years as at present. The sale of large numbers of concentrating machines is an indication of the direction mining matters are taking. One agent, Mr. R. J. Cory, has sold over fifty machines in the last sixty days. The Utah and Montana agents of the same concentrator have sold a still larger number.

There is no talk of an exhibition this year. As it failed to pay during the years it was held, the most enthusiastic seem to be discouraged. A circular has been recently issued in Denver that may possibly lead to something important. One J. V. Woodhouse, a Missourian, has discovered that he holds patents on the water-jacket idea in smelting-furnaces, and through his Denver attorneys he has sent out circulars to all manufacturers and users of the same, requesting them "to open correspondence with the view of an amicable and equitable adjustment of compensation for the manufacture or use of said invention." The numbers of the letters patent are 115,921, dated June 13th, 1871, and 168,440, dated October 5th, 1875. The attorneys have informed the Colorado Iron-Works of suit to be brought against them as a test case. While it is doubtful whether the case will hold, definite information regarding the length of time that water-jackets have been in use on any kind of furnaces is difficult to obtain in the West. Percy, in his *Metallurgy of Silver and Gold*, Part I., page 541, says the Pilz furnace was introduced at Freiberg, Germany, in 1866; and his drawings of the furnace as it was in 1878 show water-jackets substantially as in use at present; but he does not make it clear that they were originally used on the furnace. Perhaps some reader of the JOURNAL can give more definite information? F.

Review of Southern Industrial Growth.—The Baltimore *Manufacturers' Record* has published its semi-annual review of the South's industrial growth, giving the name, location, and character of business of all enterprises organized in that section during the first half of 1885, showing that, notwithstanding the general depression in business, there has been great activity in the South in the organization of new industrial enterprises. The total amount of capital, including capital stock of incorporated companies, represented by the new enterprises organized in the South during the last six months, and in the enlargement of old plants and the rebuilding of mills destroyed by fire, aggregates $36,534,000, divided among the fourteen Southern States as follows: Alabama, $3,580,000; Arkansas, $375,000; Florida, $479,000; Georgia, $1,580,000; Kentucky, $10,621,000; Louisiana, $1,407,000; Maryland, $4,633,000; Mississippi, $416,000; North Carolina, $1,535,000; South Carolina, $427,000; Tennessee, $1,802,000; Texas, $1,319,000; Virginia, $2,008,000; West Virginia, $6,532,000.

PATENTS GRANTED BY THE UNITED STATES PATENT-OFFICE.

GRANTED MAY 19TH, 1885.

318,004. Combined Throttle and Safety-Valve. Henry A. Laughlin, Pittsburg, Pa.
318,008. Combined Steam and Air Blower for Boiler-Furnaces. William McClave, Scranton, Pa.
318,009. Pipe-Coupling. Junius A. McCormick, Pittsburg, Pa.
318,014. Ore-Washer. William J. Muncey, Gunnison, Colo.
318,067. Process of Deoxidizing Molten Iron in the Manufacture of Steel. Noel B. Wittman, Pittsburg, Pa., Assignor to Pittsburg Stee Casting Company, same place.
318,082. Adjustable Metallic Packing. Francis M. Blake, Worcester, Mass.
318,088. Die for Corrugating Sheet Metal. Charles B. Cooper, New York.
318,117. Centrifugal Crushing-Mill. Frank A. Huntington, San Francisco, Cal.
318,128. Portable Tubular Boiler. William Moran, Erie, Pa., Assignor to the Erie City Iron-Works, same place.
318,170. Dumping-Car. Charles Culverson, Wescosville, Pa.
318,181. Ore-Pulverizer. James K. Griffin, Brooklyn, New York, Assignor to the Griffin Manufacturing Company.
318,193. Ore-Stamp. John W. Marshall, Stamford, Conn., Administrator of Charles Sholl, deceased.
318,206. Ingot-Mold. Abram Reese, Pittsburg, Assignor of one half to Robert C. Totten, Alleghany City, Pa.
318,225. Condensing Apparatus for Steam-Engines. John L. Alberger, Buffalo, New York, and Thomas Sault, New Haven, Conn.
318,245. Method of Reducing Ores, etc. James K. Griffin, Brooklyn, New York, Assignor to the Griffin Manufacturing Company.
318,264. Construction of Kilns, Pottery or Coke-Ovens, etc. Henry Knowles, Woodville, County of Leicester, England.
318,265. Continuous-Action Kiln for Burning Bricks, etc. Henry Knowles, Woodville, County of Leicester, England.
318,270. Metal-Covered Roof for Portable Houses. E. Lee, Corona, New York.
318,279. Miner's Pick. Andrew T. Moats, Pleasantville, Iowa.
318,328. Furnace for Burning Gaseous Fuel. Edward A. Uehling, Bethlehem, Pa.
318,337. Mining Machine. Benhard Yoch, St. Louis, Mo.
318,352. Cap and Anchor for Metallic Roofing. Benjamin F. Caldwell, Wheeling, West Va.
318,356. Pipe-Coupling. Robert B. Cogan, Braddock, Pa., Assignor of two thirds to Simon C. Collin and John Rinard, same place.
318,374. Apparatus for the Manufacture of White Lead. George L. Irwin, Alleghany City, Assignor to C. F. Wells & Co., Pittsburg, Pa.
318,420. Chuck for Rock-Drills. James E. Denton, Hoboken, New Jersey.
318,425. Apparatus for Storing Oil and Utilizing the Vapor of the same. Andrew J. Gould, Quincy, Cal.

GRANTED MAY 26TH.

318,466. Drill-Chuck. Simon P. Graham, London, Ontario, Can.
318,467. Grate for Furnace. George Dulickson, Chicago, Ill.
318,488. Coal and Ore Shift. Thomas McCarty, George E. Tener, and James McAfee, Pittsburg, Pa.
318,496. Coke-Oven. Henry M. Pierce, Nashville, Tenn.
318,497. Process of Manufacturing Coke. Henry M. Pierce, Nashville, Tenn.
318,513. Machine for Rolling Billets. Joseph S. Seaman, Pittsburg, Pa.
318,551. Process of Making Wrought-Iron directly from Iron Ores. Charles J. Eames, New York City, Assignor to the Carbon Iron Company, same place.
318,552. Process of Manufacturing Iron Sponge, Wrought and Steely Irons directly from the Ore. Charles J Eames, New York City, Assignor to the Carbon Iron Company, same place.
318,553. Process of Manufacturing Sponge and Wrought-Iron directly from the Ore. Charles J. Eames, New York City, Assignor to the Carbon Iron Company, same place.
318,554. Hearth and Lining of Graphite for Metallurgic Furnaces. Charles J. Eames, New York City, Assignor to the Carbon Iron Company, same place.
318,559. Machine for Making Metallic Roofing. Frank A. Guthrie, Gallipolis, Ohio.
318,560. Adjusting Device for Rolls. Absalom N. Miller, Pottstown, Pa.
318,582. Machine for Making Elevator Buckets. Samuel S. Scott and Richard Birtwistle, Haslingden, County of Lancaster, England.
318,603. Process of Separating Basic Compounds from Slags. Gottlieb Deumelandt, Potsdam, Prussia, Germany.
318,604. Blast-Furnace Tuyere. Walter B. Devereux, Aspen, Colo.
318,605. Process of Deoxidizing Iron Ore. Charles J. Eames, New York City, Assignor to the Carbon Iron Company, same place.
318,606. Process of Reducing Iron Ore. Charles J. Eames, New York City, Assignor to the Carbon Iron Company, same place.
318,607. Process of Manufacturing Wrought and Steely Iron directly from the Ore. Charles J. Eames, New York City, Assignor to the Carbon Iron Company, same place.
318,608. Furnace for the Manufacture of Sponge, Wrought-Iron, and Steely Iron directly from the Ore. Charles J. Eames, New York City, Assignor to the Carbon Iron Company, same place.
318,613. Conductor for Wire-Rod Mills. William Garrett, Pittsburg, Pa.
318,616. Joint for Pipes for Water, Gas, Electric Wires, etc. William Hassell, Beeston, County of Nottingham, England.
318,629. Portable Forge. August König, Brooklyn, New York, Assignor to himself and George L. Bergheim, same place.
318,636. Injector. William B. Mack, Boston, Mass.
318,670. Crushing-Mill. Eugène M. Villeroy, Schramberg, Würtemberg, Germany.
318,682. Still for Concentrating Sulphuric Acid. Charles A. Bartsch, Bridgeport, Conn.
318,688. Regulator for Controlling Combustion in Furnaces. Seth Braggins, Rochester, New York.
318,690. Furnace. Joseph W. Brightman, Cleveland, Ohio, Assignor of one half to N. W. Taylor and Frank E. Brightman, both of same place.
318,727. Rock-Drilling Machine. John Hammer and Xavier Kern, Jr., West Brookfield, Ohio; said Hammer Assignor to said Kern.
318,757. Elevator for Mining Purposes. Robert Lee, Cable, Ill.
318,839. Regulator for Gas and Air Supply to Furnaces. George Westinghouse, Jr., Pittsburg, Pa.
318,840. Pipe-Coupling for Gas-Mains. George Westinghouse, Jr., Pittsburg, Pa.
318,841. Pipe-Joint for Gas-Mains. George Westinghouse, Pittsburg, Pa.
318,862. Furnace-Grate. Joseph W. Brightman, Cleveland, Ohio.
318,932. Amalgamator. Sylvanus L. Trippe, Denver, Colo.

FURNACE, MILL, AND FACTORY.

Some months ago, a reorganization of the Albany & Rensselaer Iron and Steel Company at Troy, New York, was determined upon, and on the 16th inst. the last $1,500,000 stock was taken. Extensive improvements will be made to the present buildings. In a few days, the erection of blast-furnaces on an island opposite the present works will be begun, and a trestle railroad from the island to the Delaware & Hudson Canal Company's tracks will be built. Chester Griswold, of Troy, will probably be president of the new company.

At a meeting of the Crown & Cumberland Steel-Works, at Cumberland, Md., the following directors were elected: R. D. Johnson, John Humbird, R. H. Gordon, Robert Henderson, of Cumberland; and E. T. Cassidy, Henry Roberts, and Raphael Sargent, of Pittsburg. E. T. Cassidy was elected President, and R. H. Gordon, Secretary.

H. B. Scutt & Co., of Pittsburg, Pa., have begun a large shipment of barbed wire to San Francisco, Cal. The order is for 210 tons.

The contract for the engine of the Montreal Water-Works has been awarded to Mr. H. R. Worthington. The total cost will be $51,150, the same to include the foundation for the engine, the contract to be completed by the 1st of December.

Joseph Corns & Sons' rolling-mill at Massillon, Ohio, has resumed operations after remaining idle since June 1st.

The Pennsylvania Forge, built in Sharpsburg, Pa., two years ago, but never operated, has been leased for five years, and will be turned into a forge and machine-shop.

Executions were issued last week against the Wheeler Iron Company, of Sharon, Pa., to the amount of more than $70,000, and the sheriff has attached the property of the firm. Dullness of trade is supposed to have caused the failure. The company, it is said, thought of converting the mill into a steel mill this fall.

H. K. Porter & Co., of Pittsburg, Pa., are building quite a number of light engines for the H. C. Frick Coal and Coke Company, to use at its ovens in hauling out buggies for charging the ovens. Heretofore, mules have been used for that purpose.

The Keystone Bridge Company, of Pittsburg, Pa., last week completed an iron beam said to be the largest ever turned out in this country. It is to form a portion of the structural work for the Bartholdi Monument. It weighs 70,000 pounds. The plates from which the beam was constructed were rolled at the Spang Steel-Works.

The fish-plate mill of the Bay View, Wis., works of the North Chicago Rolling-Mill Company resumed work on the 17th. It is probable that work will continue pending a settlement of the scale, or under the provisions of the scale, as the Amalgamated Association has suggested heretofore that work could be resumed under these conditions.

Two sheet-iron mills at Wheeling, West Va., the Etna and the Standard, have given notice that they will close down for an indefinite period.

The Cincinnati Corrugating Company, of Cincinnati, Ohio, manufacturer of superior roofing, siding, ceiling, arches, lath, and shutters, has issued a new and enlarged catalogue, which will meet the demands of the company's numerous patrons.

The latest reports from Pittsburg, Pa., show that the Kittanning Works have started up, making 75 tons muck-bar daily. At the Sable Iron-Works, 22 puddling-furnaces have started up on six heats. Spang, Chalfant & Co., Shoenberger & Co., the Wayne Iron-Works, and the Sligo Works are in partial operation, while in the following works the finishing departments are running full, some on double turn: Black Diamond, Crescent, Juniata, Linden, Singer, Nimick & Co., Hussey, Howe & Co., and Sligo Works. At the Union mill, the puddlers have been notified to work as full as possible, without losing a heat.

The tube manufacturers of the United States met at Pittsburg, Pa., on the 22d inst., for the purpose of forming an organization to maintain prices. The matter was considered at length, but nothing definite was done. It is stated that every tube-works in the country was represented.

The Spence automatic furnace, which has been in the market one year, has given general satisfaction and has sold well. Up to the present time, sixteen have been placed, and orders for fourteen more are on hand, and are building at the shops of Messrs. S. L. Moore & Sons, Elizabeth, New Jersey.

The bicycle is rapidly coming into use for business, and one of the best recorded examples of its practicability for that purpose is that recently given by Mr. C. D. Kershaw, of Cleveland, Ohio, who has within the last fourteen months, in the regular discharge of his duties, ridden one Expert Columbia bicycle over 11,000 miles, and during that time an occasional filling of the little oil-can constituted the entire running expense.

The Wilson-Snyder Manufacturing Company has filed a charter. The capital stock is to be $100,000. Augustus Snyder is president; Joseph Hite and John H. Wilson directors; and Robert J. Wilson secretary and treasurer.

A settlement has at last been effected between the insurance companies in which the Falcon Iron and Nail Company had their works insured, and the company has received $27,000 as an amicable settlement. Nothing definite can be learned as to the future intentions of the company, and whether its mills will be rebuilt and started soon is not decided. It is understood, however, that if the company should build at Pittsburg, Pa., a larger mill will be put up than the former one.

Messrs. Ribon & March, of Jersey City, have cast for the New York Pneumatic Dynamite Gun Company one of the most powerful guns, it is said, in the world. The barrel is 60 feet long, is breech-loading, and weighs 43 tons. It is of heavy wrought-iron, brass lined throughout, and with a full bore of 8 inches. It was cast in four sections, 15 feet long, with iron collars that are welded together with stout steel bolts. The barrel is bolted to eight reservoirs, where the compressed air necessary to fire it is stored. Brass nozzles connect the reservoirs with the barrel, and the amount of air necessary to throw out the projectile is regulated automatically. Upright castings carried on twelve-inch channel irons support the whole, which is moved by compressed air to any position desired by the gunner. More formidable looking than the gun itself is the projectile fired. The cartridge, which is of brass, is five feet long, and fits the bore snugly. In an iron cone at the head of the projectile 180 pounds of dynamite are stored, covered with a slight cap of thin metal, which is easily broken off, exploding the projectile wherever it strikes.

The iron foundry of James Bates, at Baltimore, Md., was destroyed by fire on the 22d inst. Damage, $2000; insured.

The Camden, Pa., Water Department asks for proposals, which will be received until July 27th, for supplying the department with cast-iron water-pipes and the necessary branches, curves, and all special castings. Also 3, 4, 6, 8, 16-inch pipe and stop-valves. Also 4½-inch fire hydrants (complete), with engine and hose outlet.

The stockholders of the Glasgow Iron Company at Pottstown, Pa., have resolved to increase their capital stock for the purpose of erecting two large mills for the manufacture of steel under the Clapp-Griffiths patent. Work on the new buildings will begin at once.

The Palmer Wire Company of Palmer, Mass., has been petitioned into insolvency by creditors.

The rebuilding of the puddling-furnaces at the Vesuvius Iron-Works, at Sharpsburg, Pa., has been resumed, with the expectation of starting up soon, after a shut-down of almost twenty months.

An order for heavy steel plates, for San Francisco, Cal., has just been turned out at the Spang Steel and Iron-Works, at Pittsburg, Pa.

A. M. Byers & Co., of Pittsburg, Pa., are enlarging their works and erecting two more new lap-weld furnaces.

The old "Little Pet" furnace at New Castle, Pa., is tearing down and arrangements have been made to remove all the old buildings from the Brown heirs' estate. It is learned that the heirs were anxious to sell the "Little Pet" and have it removed, but they refused to sell the ground, and the buyer refused to accept the furnace without the ground. This is the property on which, rumor says, the Pittsburg & Lake Erie is going to build a steel plant.

LABOR AND WAGES.

The Nailers, Nail-Plate Heaters, and Rollers' National Association that was in session at Wheeling, West Va., last week, adjourned on the 18th inst., to meet at Columbus, Ohio, in July, 1886. The nail feeders resolved to accept the nail machines at the manufacturers' scale adopted at Cincinnati. It is said that the mill-owners who were waited on agreed to give the feeders who accepted nailers' places a guarantee of permanent positions.

The State Convention of the Miners and Laborers' Amalgamated Association was held in Pittsburg, Pa., on the 22d and 23d inst., and decided to refer the question of affiliation with the Knights of Labor to the National Convention that meets at Indianapolis in August.

The strike of colliers at the Denby collieries, in South Yorkshire, England, has ended in favor of the company.

TRANSPORTATION NOTES.

The Union Canal Company was reorganized under the name of the Schuylkill & Middleton Canal Company, at a meeting of the bond purchasers and stockholders held at Philadelphia on the 20th inst. The capital stock was placed at $63,000, divided into 5602 shares, in accordance with the agreement to exchange one share for every $500 bond under the terms of the sale of May 19th.

The statement of the business of all lines of the Pennsylvania Railroad Company east of Pittsburg and Erie for June, 1885, as compared with the same month in 1884, shows a decrease in gross earnings of $170,536; an increase in expenses of $3046, and a decrease in net earnings of $173,582. The six months of 1885, as compared with the same period of 1884, show a decrease in gross earnings of $2,013,656; a decrease in expenses of $421,274, and a decrease in net earnings of $1,592,382. All lines west of Pittsburg and Erie for the six months of 1885 show a deficiency in meeting all liabilities of $886,008, being an increased deficiency, as compared with the same period of 1884, of $121,153.

COAL TRADE NOTES.

CALIFORNIA.

It is reported that Professor Hanks, State Mineralogist, has analyzed the coal found at the Presidio, and finds it to consist of fixed carbon, 47·55; volatile combustible matter, 7·30; water, 4·40; ash, 45·15. The coal produces a fair coke.

ILLINOIS.

License to incorporate has been extended to the Fountain Coal Company, of Chicago, to purchase and lease coal lands and to mine and sell coal; capital stock, $50,000; incorporators, George Kimball, A. B. Thilkie, and W. A. Gardner.

MEXICO.

There are no new developments concerning the Mexican Central Railroad's coal lands; but the experimental shaft on the Central's ground is down one hundred feet, and the workmen are awaiting new machinery.

OHIO.

The Pomeroy Coal Company, one of the largest organizations of the kind in the vicinity of Pomeroy, made an assignment on the 20th inst.

PENNSYLVANIA.

ANTHRACITE.

Four of the ten suits for damages instituted by the families of the victims of the disaster at the Cuyler colliery at Raven Run, have been compromised by the payment of $1000 in each case. The amount of damages claimed was $20,000 in each case, or an aggregate of $200,000. One thousand dollars each has been paid to the widows of Murer and Mervine, and $2000 to the wife of William Anderson, who lost both her husband and her son by the disaster. It is understood also that negotiations are pending for the settlement of the remaining suits on the same basis by the owners and operators, S. M. Heaton & Co. As yet the Philadelphia & Reading Coal and Iron Company has not taken the Cuyler colliery off the hands of the land-owners, and it is thought that the Heatons will renew their lease and start operations.

East Bear Ridge colliery, at Mahanoy Plane, operated by the Philadelphia & Reading Coal and Iron Company, has been abandoned. A large force of men is at work putting West Bear Ridge in good order, so as to increase its capacity. It will require several months to make the necessary improvements.

The Henry Clay shaft, at Shamokin, formerly operated by J. Langdon & Co., passed into the hands of the

Philadelphia & Reading Coal and Iron Company on the 1st inst. Men are engaged in repairing the colliery, so as to be ready to be in operation when required.

The mine inspectors of Schuylkill and Luzerne counties have decided to have two thousand large placards printed with notices of the new mine law thereon, to be posted at the different collieries, and ten thousand copies of the new law printed for distribution among the employés of the mines. The State will be asked to make an appropriation to meet the expense.

Carpenters were employed in timbering a faulty chamber in the Hollenback Shaft, 700 feet under the ground, on the 18th inst., when a lamp fell from one of the men's hats and ignited the gas. A fierce fire was soon raging. A large force has since been engaged in fighting the flames.

BITUMINOUS.

Samuel R. Long, of Connellsville township, Fayette County, has sold to H. C. Frick & Co. one hundred acres of coal for $40,000.

A company to be known as the Nottingham Coal Company has purchased 100 acres of coal land and 50 or 75 acres of surface land, at Venetia, and has the option of 2000 acres more. It has secured a frontage to the railroad three quarters of a mile long, and the entrance of two main entries is almost completed. The company expects to be able to run coal from the mine by the first of October, 1885.

The Umpire mine, in the fourth pool of the Monongahela, has been shut down by a heavy fall in the mine. Men are busy at work clearing the fall away. but it will be several weeks before work can be resumed in the mine.

COKE.

The coke syndicate has appointed an inspector of coke, whose duties are to examine the product of each works, and see that it is up to the proper average.

The Pittsburg Coke Syndicate, at a meeting held on the 18th inst., decided that no change in price or output should be made for the ensuing month, but will continue to limit work to five days in the week, and the output to 60 per cent of the capacity.

TEXAS.

Special dispatches from Eagle Pass state that the Sabinas coal mines were ordered closed on the 21st inst., by a Mexican federal judge, on a suit brought by Milmo, the Mexican banker, who claims the property. This is the third time since the mines were opened in 1883 that operations have been stopped by order of the court, at the instance of Milmo, who claims the property under a Spanish grant to his wife's ancestors. These mines were turning off one hundred tons daily, employing two hundred men, who are thrown out of employment. The property with improvements is worth $1,500,000. It is expected that the difficulties will be removed within thirty days, steps for that purpose having been taken.

GAS AND PETROLEUM NOTES.

Exports of refined, crude, and naphtha from the following ports, January 1st to July 18th :

	1885. Gallons.	1884. Gallons.
From Boston	5,123,294	2,725,606
Philadelphia	75,352,989	40,520,012
Baltimore	6,028,864	6,997,041
New York	196,397,056	202,767,112
Total exports	282,902,203	253,009,771

OHIO.

The Natural Gas Company at Findlay has struck another vein at a depth of 1208 feet. The flow, which is estimated at 1,200,000 cubic feet in twenty-four hours, was so strong that water could not be forced into the well. There are now five wells in operation at Findlay, with a daily capacity of 4,000,000 cubic feet.

PENNSYLVANIA.

It is stated that suits for damages aggregating $25,000 will soon be instituted against the Fuel Gas Company by a number of persons injured by the explosion of natural gas in the Seventeenth Ward, Pittsburg, last spring. These are the first suits in the Allegheny County courts for injuries received by natural gas explosions, and the result will be watched with interest.

Vandergrift & Co., of Pittsburg, have leased the gas rights of 3000 acres of ground in the vicinity of Burnsville, Washington County. The well they are now drilling on the McCleery farm is about 300 feet deep.

The Brushwood Developing Company has filed a charter. The company is to mine for, produce, and sell petroleum, and to lease land for that purpose. The head-quarters of the company will be in Pittsburg. Its capital stock is $10,000, divided into 200 shares at $50 a share.

GENERAL MINING NEWS.

CALIFORNIA.

Mr. J. B. Randol furnishes us with the following statement of the production of quicksilver for June :

Mines.	1884. Flasks.	1885. Flasks.
Ætna	215	112
Napa Consolidated	0	250
Great Western	258	330
Guadalupe	200	0
New Idria	44	62
Sulphur Bank	0	91
Redington	118	50
Great Eastern	0	63
Various	0	5
New Almaden	1,859	1,750
	2,694	2,713

AMADOR COUNTY.

PLYMOUTH CONSOLIDATED.—The total amount of bullion produced for the first six months of 1885 is $493,607.65 ; the total operating expenses for the same period were $160,792.84, showing a profit of $332,-814.81. The cash on hand July 1st was $96,195.01. This was actual surplus, the company having no indebtedness whatever. Level No. 5, now 1410 feet deep, has been opened. It presents the same general characteristics as the preceding levels. The ore is of the best quality, and is as rich in free gold and sulphurets as the best of the higher levels. The tunnel running south on No. 2 level is 912 feet long, measuring from the Pacific shaft. Indications of the proximity of ore are more favorable than at any previous time. The new Woolford shaft is down 318 feet. A drift running north in the ore has begun, and is now in 20 feet. The rock is of good quality, with a large per centage of sulphurets. The vein is of same width as last reported—seven feet. This body of ore is a new feature in this property, and is entirely distinct from the main mine, being 600 feet east of it. The introduction of water for power, together with economica management, have reduced the operating expenses to a minimum.

MONO COUNTY—BODIE DISTRICT.

There is nothing of importance to report save the usual work of development at the different mines.

SAN BERNARDINO COUNTY.

CALICO MINING AND REDUCTION COMPANY.—The new five-stamp quartz mill was set in operation for the first time on the 4th inst. The mill is a few yards above the Daggett Sampling-Works, and the stamps of the former are operated by means of the engine contained in the latter.

CENTRAL AMERICA.

HONDURAS.

POTOSI MILLING COMPANY.—Two bills have been filed at Chicago, Ill., that involve the interests of this company. According to the *Inter-Ocean*, the company complains of Seth McLean, of Bay City, Michigan, president, Seth A. McLean, his son, treasurer, and John M. Grimes and Albert Hagan, stockholders of the company. William K. Spearling, vice-president of the company, is complainant in the bill filed in the Superior Court, while the Potosi Milling Company, Seth A. McLean, Seth McLean, Albert Hagan, and John Grimes are defendants. Both bills make the same allegations, but ask for different relief. The company was organized in June, 1883, to develop mines in the republic of Honduras, with a capital of $50,000, which was increased to $500,000 in 1884. McLean and son own one half of the capital stock, and Spearling, H. S. Jacobs, and John H. Witbeck the remaining shares. The mines are improved with about $50,000 worth of machinery, houses, etc. The McLeans are charged with working to freeze out Spearling, Jacobs, and Witbeck, and with having called special meetings at times when the by-laws did not provide for them. It is alleged that they have generally inaugurated a policy of obstructing development of the mines, said to be very valuable. Spearling, Jacobs, and Witbeck contributed $40,000 toward bringing out the ore in the property, and Seth A. McLean was to contribute $40,000. The latter has failed to come to time with his contribution, and is charged with using part of the other $40,000 for his own personal benefit, and ha refused to account. Seth A. McLean, the bills state,s is running things to suit himself and his father, and has called a meeting to be held at the Leland Hotel for the purpose of electing Grimes and Hagan as superintendents of the company. The bill filed in the Circuit Court asks for an injunction and an accounting, while the other only seeks an injunction to prevent the meeting. Both writs were granted.

COLORADO.

ARAPAHOE COUNTY.

OMAHA & GRANT SMELTING COMPANY.—It is stated that during the past twelve months the company has paid to the Union Pacific Railroad, for the transportation of ore, bullion, fuel, etc., $1,175,000.

CLEAR CREEK COUNTY.

The following transfers of mining properties have recently taken place at Georgetown : H. H. Miller to T. P. H. Miller, one third of Apex and Sunny South lodes, in Jackson Mining District ; consideration paid, $12,000. L. C. Ellsworth, Receiver of First National Bank of Georgetown, Hukill Gold and Silver Mining Company to F. F. Osbiston, part of Hukill lode and water-power, Spanish Bar Mining District ; consideration, $10,000.

PULASKI.—The company has leased the mill known as the Corry City, and intends renovating the inside portion and putting in concentrating machinery different from that now in place.

CUSTER COUNTY.

BASSICK.—The sale of the personal property, which was to have been sold under judgment by the sheriff on the 13th inst., has been postponed indefinitely by general consent, in view of a more amicable arrangement.

GILPIN COUNTY.

The Omaha & Grant Smelting Company has opened an agency in Black Hawk.

DENVER GOLD COMPANY.—At an extraordinary general meeting of shareholders held at London, England, July 6th, resolutions were passed authorizing the issue of 80,000 preference shares of 5s. each, credited with 2s. 6d. as paid. The shares are to bear noncumulative interest at the rate of 10 per cent, and to divide any surplus profits equally with the ordinary shares. The directors who hold £4500 out of the £5000 of debentures, are willing to convert their debentures into preference shares, and besides to subscribe for additional shares to the total extent of $10,000, provided that at least 50,000 are taken up by the other shareholders. The preference shares would, therefore, form a first charge on the assets of the company in the event of liquidation. Altogether, the capital of the company will be about £40,000, which is a very small amount for so large and promising a property. The statutory meeting of shareholders was held on the 9th, when it was stated that Mr. Norris, the liquidator of the old company, who is going out to Canada, had been authorized to make arrangements with the creditors of the old company.

LACROSSE.—The company claims 200 feet on the Missouri lode each side along the line of its tunnel. The Missouri lode was sold to the Mercer County Company about seventeen years ago, and was afterward jumped and relocated by some parties at Central City. The property was then producing largely, and was sent to New York with good reports. By some mistake, the property was placed by a New York broker before the real owners of the property, who declined to buy it over again. They promptly sent an agent here, who took possession in the night for the company, which still holds the fort "on top." The mine is situated between the Burroughs and Roderick Dhu lodes on Quartz Hill. All three of these mines have been large producers of gold in the past, and are so now. The Burroughs lode, through which the tunnel passes, has a shaft 900 feet deep, and is owned by the Lacrosse Company under a United States patent. Should the Lacrosse Company sustain its claim to the Missouri lode, it will cross-cut and work both veins through the same shaft. It may be in order to inquire, says the *Register-Call*, what has become of the $250,000 in gold taken out from this lode from below the fifty feet of surface ground described in the records. The Mercer County and Lacrosse companies are both foreign incorporations, organized under the general mining and incorporation act of the State of New York. The Superior Court will have to decide this question of title.

LAKE COUNTY.

The Leadville *Herald* reports the following :

Mr. C. De F. Hawley, a metallurgist, who in the past has had charge of the Grant and Elgin smelters, but is

now conducting an assay-office and laboratory at Leadville, has supplied the *Herald* with the following observations on the treatment of Leadville ores :

The problem how to treat the low-grade ores of this district is becoming every day more important, and in the near future, unless it is successfully solved, the outlook for our continued prosperity is not encouraging. The fire-process, or smelting, has reached such perfection here that an improvement in it and a consequent reduction in the price of treatment of ore seem an impossibility. This leaves vast bodies of ore carrying from eight to fourteen dollars in silver and from two to six per cent of lead, for which, unless the ore is especially desirable as a flux, the smelter can not afford to pay any thing. Concentration has been tried, and in a few isolated cases about wages have been made, but in most instances there has been nothing to record but failure. Of the other methods that have been successful in the reduction of ores, there remain amalgamation and leaching. The amalgamation of Leadville ores has not, however, thus far met with much success. There remains then only the process of leaching to depend upon for the reduction of our low-grade ores. Leaching-works hitherto erected in Colorado have not proved a financial success, and I believe that one of the chief causes of their failure was, that none of them had sufficient capacity, and in consequence the cost of treatment per ton of ore was in excess of that charged by lead smelters for the reduction of even dry ores.

The following are the results of some experiments made by leaching a few of the ores of the Leadville District. The tests were made both on the raw and chloridized ore, and in each instance both by the hyposulphite solution alone and by the Russell improved process of leaching :

No. of Tests.	Ounces of silver per ton of ore.	Hyposulphite Solution Alone.				Russell's Improved Process.			
		Raw ore.		Roasted.		Raw ore.		Roasted.	
		Oz. silver leached.	Per cent leache	Oz. silver leached.	Per cent leached.	Oz. silver leached.	Per cent leached.	Oz. silver leached	Per ton leached.
No. 1.....	42·0	37 5	89·2	37·8	90·0	39·5	94·0	39·0	93·0
No. 2.....	18·0	12·0	67·7	14·5	80 0	12·0	67·7	15·2	84·4
No. 3...	12 0	7·0	58·3	10.1	84·1	10·0	83·3	11·2	93·3
No. 4	14·0	9·0	64·2	9·2	65·7	9·1	65·0	9·4	67·1
No. 5.....	14 5	6 0	41·3	11·3	78·6	7·5	51·6	12·1	83·4
No. 6.... ...	38·0	27.0	71·0	35·0	91 0	29·5	77·6	36 8	97·3
No. 7..... .	15·0	8 0	53·6	12 0	79·6	7·8	52·0	12·5	83·3

No. 1 was an ore containing no lead, highly siliceous, and the silver chiefly present as a chlorobromide.

No. 2 was a basic ore, containing about twenty per cent of manganese and very little lead.

No. 3 was a partially oxidized iron ore, containing thirty per cent lead, chiefly in the form of galena.

No. 4 was a highly manganiferous ore, and also contained a considerable quantity of lime.

No. 5 was a pure sulphuret ore, containing about ten per cent lead and thirty per cent zinc.

No. 6 was a sample of ore from Sugar Loaf Mountain, highly siliceous, and the silver undoubtedly in the form of a sulphuret.

No. 7 was a sample of flue-dust from one of our smelters, carrying twenty-six per cent lead.

ADAMS.—A new shaft, sinking on the company's property about 1000 feet from the existing producing shafts, and on the north side of Stray Horse Gulch, near the Forest City mine, is down 170 feet. Its location is a very promising one. While this new shaft is sinking, drifting on the contact to the northward from the Brockland shaft is continued, and every foot of advance made increases the resources of the mine, as the north drift is in good ore, and occasionally in very rich silver chloride-bearing mineral.

ALLEGHANY CONSOLIDATION.—The lessees propose, as soon as the water will permit, to connect their shaft by drift and incline with the Right Angle shaft. The formation below the bottom of this shaft has been shown up by a diamond drill, which is credited to have passed through about thirty feet of pay ore.

CHRYSOLITE.—The mine is producing about twenty-five tons of smelting or first-class ore a week, and considerable milling and concentrating ore. The amalgamating mill of the company is treating about forty-five tons of ore a day, secured from the company's property, which averages eleven ounces in silver to the ton. Small quantities of ore are also purchased and run through the mill, returning fair profits. All ores encountered in working the dumps or mine, carrying a perceptible quantity of lead, are sent to the concentrating-works on the premises of the mine.

DAISY CONSOLIDATED.—The capital stock has been increased from 25,000 shares of 10 dollars each to 100,000 shares of equal par value.

FIRST NATIONAL.—This mine, in Iowa Gulch, has been leased to Mr. Boiler, who has contracted with the Excelsior Iron-Works for a 25 horse-power double engine and a 35 horse-power boiler.

LEO.—Work is to be resumed on this shaft at Oro. It is but a short distance east of the Colonel Sellers mine ; and if it discloses ore, the mineral will doubtless be a sulphide, possibly the extension of the Crown Point mine ore-chute.

MORNING STAR.—The last returns from the smelters show the ore from the Nevers shaft, which is worked under a lease, to contain forty-nine ounces in silver to the ton and to carry forty-nine per cent in lead.

PITKIN COUNTY.

The Aspen smelter on the 13th inst. blew in one stack. It was expected to start the new stack the next day, when eighty tons of ore were to be treated daily.

Tingley S. Wood, of Leadville, has been appointed receiver of the Aspen mine, by Judge Goddard. There is much excitement at Aspen in consequence. The Connemara, next to the Aspen, will shut down. The Millinee, however, will continue.

PUEBLO COUNTY.

PUEBLO SMELTING COMPANY.—A new reverberatory furnace has been added to this company's plant, for the treatment of antimonial ores. The smelter is now running all its blast-furnaces and treating over five hundred tons of ore a day, the great bulk of which comes from Leadville.

SAN MIGUEL COUNTY.

TABOR, SEAMAN & ALLEY PLACER MINING COMPANY.—Work has begun. The property is on Bear Creek, about seven miles down the Miguel. Considerable work has been done, but, on account of incompetent management, the work has been unremunerative. The gravel is conceded, by all who have prospected it, to be quite rich. The company has already spent over $20,000, and so great is its confidence in the final outcome that, it is stated, it has placed unlimited means at the disposal of its superintendent.

DAKOTA.

LAWRENCE COUNTY.

FATHER DE SMET.—Official reports from the superintendent state that bar No. 211 contained 1088·10 ounces of gold, the result of the clean-up of the mill for the final run of the mill in June, making a total of 1929·20 ounces for the month's yield. This is not quite as satisfactory a showing as was expected from the outlook a month ago, but is the best that could be done ; the ore has dropped off a shade and there have been more delays at the mill than usual. The outlook is hardly as favorable as it was ; but the showing for about the present grade of ore is very good, and is likely to improve before long. The fourth level uprise is getting into a better character of ground, with the chances of cutting an ore-body better than ever. During the week ended July 15th, 2100 tons of ore were extracted and milled.

IRON HILLS.—A force is at work enlarging the shaft and placing the mines in good shape ready for the mill.

FANTAIL.—These mines show development-work enough to warrant the company in purchasing a silver mill and roaster.

FAR WEST.—At the annual meeting at Deadwood, the following officers were elected : President, D. A. McGee, Sioux City ; Vice-President, M. Wheeler, Chicago ; Secretary, Aaron Hattenbach, Deadwood ; Treasurer, Joseph Hattenbach, Deadwood ; Superintendent, T. H. White, Deadwood. As soon as the present contract for sinking has been completed, drifting and cross-cutting will begin, and the mine be thoroughly prospected and developed. The hoisting-works and pump are working well, and are all that will be required to sink to a depth of 500 feet. The ore grows better as the depth increases.

IDAHO.

TAHOMA GOLD AND SILVER MINING COMPANY.—Subscriptions are asked by the company for £175,000 first mortgage debentures of £20 each (2650 of which are said to have been already taken), bearing interest at the rate of 10 per cent, guaranteed by the venders for five years. The London *Mining Journal* states that there is no reference in the prospectus to any deposit of cash or securities by the vender to meet this interest in the event of unforeseen circumstances. The vender, however, takes the principal of the purchase-money—£438,000—in shares, and transfers the mines to the company on payment of £75,000 on account. With each debenture will be allotted free one fully paid-up £5 share, which will rank for dividend estimated at over 20 per cent a year upon the completion of a 10-stamp mill, undertaken by the vender at his sole cost. It is stated that the mine is in full operation, and guaranteed by the vender to earn with one 10-stamp mill a net profit of upward of £4000 a month (£50,000 a year), which result is obtained by the labor of 22 men only, constituting the entire working force employed at the mine and mill.

VIOLA.—This company has contracted with the Utah & Montana Machinery Company for six carloads of machinery, to be delivered at Camas. Included in the purchase is one and a half miles of Hollidie's patent tramway, a pair of tubular boilers 54 by 16, Westinghouse 75 horse-power engine, Blake crusher, set of improved Cornish rolls, No. 6 Baker blower, etc.

ILLINOIS.

COLFAX MINING AND MILLING COMPANY.—This company, of Chicago, has been organized for the purpose of doing a general mining and milling business. Incorporators, Edward W. Russell, Rufus C. Hall, and Samuel D. Snow.

MICHIGAN.

COPPER MINES.

CALUMET & HECLA.—The company is rapidly reducing its expenses by mechanical appliances and increased output. It will soon dispense with all the men who shovel the rock into the crushers at the stamp-mill, and the work will be done by machinery. This will save, it is said, $20,000 a year. The company will also increase from four to twelve tons the capacity of the cars bringing the ore from Calumet to Torch Lake.

CONGLOMERATE.—The stockholders will meet early next month, to arrange for the sale of their property.

IRON MINES.

The following statement, published by the Marquette *Mining Journal*, shows the amount of iron ore and pig-iron shipped from the lake ports of that district for the season, up to and including Wednesday, July 15th :

	Gross tons.
Marquette	249,508
Pig-iron	1,280
L'Anse	5,829
St. Ignace	32,5?2
Pig-iron	1,433
Escanaba, Marquette District	211,183
Menominee District	296,450

The shipments by lake from all ports of the district up to date amount to 805,492 gross tons, against 1,135,276 tons at the corresponding date last year, the falling off for this season being 329,784 tons.

MONTANA.

LEWIS & CLARKE COUNTY.

PENOBSCOT.—Mr. Longmaid has purchased the old Penobscot property, near Marysville, for $4000. It is said that only a few years ago it was sold for $500,000, and was pronounced by mining men and experts to be one of the richest mines ever discovered ; but after the erection of expensive machinery and great developments had been made, the company suspended operations, and the machinery was sold.

RED MOUNTAIN TUNNEL AND MINING COMPANY.—This company has been organized with a capital stock of $250,000, divided into 50,000 shares, of a par value of $5 each. The following are the officers : President, J. S. Tooker, Secretary of Montana ; Vice-President, M. L. Streator ; Treasurer, A. M. Thornburgh ; Secretary, W. B. Reed. The object is to tunnel Red Mountain from the north side, at the level of true fissure-veins. Nearly all the locations on the mountain have been made on the west side, where the vein comes to the surface, and the expectation of the tunnel projectors is, to strike all these leads at a greater depth and richness. Their claim allows them to run their tunnel in 3000 feet, and to work out 1500 feet of

every vein of ore that they strike in their progress. The other claims, numerous as they are, will not be interfered with by the tunnel, whose proposed route runs beyond the extent of all the other claims, except the Jeannette and Oneida, which are crossed by it and owned by the company. The leads all run east and west, and as the tunnel will run in from the north side of the mountain, it will cross all the veins it strikes nearly at right angles. It is to be built with only sufficient grade to make the transfer of ore easy and the drainage effective. Its dimensions are to be 7 feet in hight and 5 feet in width.

MEAGHER COUNTY.

TOSTON SMELTER COMPANY. — The company is moving rapidly ahead with the construction of its smelting-works at Toston, in the Missouri Valley. The foundation for the main building is already finished, and work on the stack has begun. The company expects to be ready to make its first run in about three weeks, on ore from the vicinity of Radersburg.

SILVER BOW COUNTY.

Mr. E. D. Reynolds, the well-known mining machinery man, met his death on the 14th, by falling from the timbers in the pumping-shaft to the 500 foot station of the Alice shaft.

The Utah & Northern branch of the Union Pacific Railroad received at Butte during June 470 car-loads of matte and copper, with an average of 31,000 pounds to the car, or a total of 14,580,000 pounds. The Pacific Express Company received during the same time silver bullion as follows: Bars, 297; total pounds, 30,272½; total ounces, 484,360; estimated value at $1 an ounce, $484,360.

BELL.—According to local papers, the following attachments have been entered against this property, which is now in the hands of the sheriff: Clark & Larabie, for $23.239.92, balance due for money loaned and advanced to the defendants, paid out for them, and for over-drafts. Geoffrey Lavell, William McDermott, Lee W. Foster, Patrick Largey, Albert Kleinschmidt, and Lee Mantle for $2363.70, for 337·67 tons of ore sold to the defendants last fall. Lee W. Foster & Co., for $3925.56 for goods, wares, merchandise, and wood sold and delivered to defendants during the last year. W. M. Jack, $1212.67, for goods, wares, and merchandise sold to defendants.

NEVADA.

EUREKA COUNTY.

EUREKA CONSOLIDATED.—The official report for the week ended July 11th shows that there were hoisted 275 car-loads of ore from tributers. Williams's pitch has opened out well in going south and north; but in the north workings, which are at the bottom of the pitch, the ore has deteriorated in value. Bennett's & Mulcoy's pitch has broken into the old seventh chamber. Notwithstanding this, there is plenty of good-looking ground in this pitch, in which they may find ore at any time. S. H. Stevens's pitch on the first K. K., Hendra's on the eighth level, and Doyle's on the twelfth level, all look promising. During the week, the furnace has produced 870 bars of bullion, weighing about 47 tons, valued at about $294 a ton. There are about 250 tons of speiss, half the amount required for the experiment, crushed and piled.

STOREY COUNTY—COMSTOCK LODE.

ANDES.—Men are engaged in cleaning out the drifts on the 350 and 475 levels preparatory to resuming operations in the face of the openings.

BEST & BELCHER.—The old board of directors and officers was re-elected at the annual meeting held in San Francisco recently.

CONSOLIDATED CALIFORNIA & VIRGINIA.—From the 1750 level, there were extracted during the week ended July 11th 612 tons of ore, and shipped to the Morgan mill 675 tons and 1695 pounds. The average assay value of the ore milled during the week, as by samples taken from the batteries, was $28.60 a ton. The amount of bullion shipped July 3d was $31,779. This, with the previous shipments, amounts to $84,-594.84, assay value, and was the yield of 5058 tons of ore worked at the Morgan mill. There have been extracted under the Jones contract 152 tons of ore, and shipped to the Eureka mill 309 tons and 1660 pounds. The average assay value of the ore milled during the week, as by samples taken from the battery, was $18.35 a ton.

HALE & NORCROSS.—The bottom of the winze below the 3000 level is in ore of lower grade; but the body is more generally diffused and stronger than at any point where it has been prospected heretofore. It is also found to extend much farther east than was anticipated. A second bar of bullion, valued at $2315, has been shipped.

MARIPOSA.—This mill will soon be dismantled, and instead of rebuilding it at some point on the river, as has been stated, the frame will be removed to the Woodruff mill, near Dayton, and used as a building for a refinery.

OMEGA.—The machinery now used in the bluestone manufactory and refinery at the Omega mill in Six-Mile Cañon will also be transported to the Woodruff.

OVERMAN.—The daily shipments have been discontinued for the present, because the daily amount of ore taken from the Belcher has recently been largely augmented, and it was therefore necessary to use the Vivian mill on the Carson River, which heretofore has been running on Overman ore.

UTAH.

SUMMIT COUNTY.

ANCHOR.—The White Pine and Utah mining companies have been consolidated under the name of the Anchor Company, and work has been resumed on the claims. The new company includes, besides the old owners, a number of Michigan capitalists, who were induced to embark in the enterprise through the influence of Colonel Ferry.

APEX.—Shipments have begun. The stock is variously quoted at 25 and 30 cents.

CRESCENT.—Reports from Salt Lake City dated the 12th inst. state that the latest sales known were at $1.10. Shipments are coming down in good shape.

VIRGINIA.

LOUISA COUNTY.

ARMINIUS.—The daily shipments now amount to 80 tons, and the prospects of the company's mines continue good. It has recently taken possession of its new offices in the Eagle Building, No. 71 Wall street, New York City.

WISCONSIN.

The first train of iron ore from the Ashland, Montreal & Gogebic Iron Range, arrived at Ashland on the 15th inst. It comprised twenty cars of ore from the Germania mine, and is a part of three cargoes that will be forwarded to Cleveland next week. This is the first shipment from the range to the ore-dock in Ashland.

BULLION PRODUCTION FOR 1885—SPECIAL OFFICIAL REPORTS.

MINES.	States.	Month of June.	Year from Jan. 1st, 1885.
		$	$
Adams, S. L.	Colo.	30,000	206,103
Alice, G. S.	Mont.	96,352	549,236
Belmont	Nev.	——	10,063
Boston & Montana, G.	Mont.	44,044	226,840
Christy, S.	Utah	21,795	130,229
Chrysolite, S.	Colo.	6,722	31,428
Colorado Central, S.	Colo.	19,682	111,672
Consolidated Bobtail, G.	Colo.	7,831	41,228
Deadwood-Terra, G.	Dak.	....	177,291
Derbec Blue Gravel, G. S.	Cal.	12,546	79,789
Essex, G. S.	N. S.	.....	6,474
Eureka Consolidated, S. L.	Nev.	——	10,266
Father de Smet, G.	Dak.	31,373	196,588
Freeland, G. S. C.	Colo.	.....	162,218
Grand Prize, S.	Nev.	15,576	153,643
Granite Mountain, S.	Mont.	111,499	508,543
Hall-Anderson, G.	N. S.	....	3,695
Head Center & Tranquillity	Ariz.	——	85,396
Hecla Consolidated, G. S. L. C.	Mont.	.....	*339,640
Helena, G. S. L. C.	Mont.	.....	451,000
Homestake, G.	Dak.	.....	489,976
Hope, S.	Mont.	13,818	80,446
Iron Silver, S. L.	Colo.	....	251,167
Kentuck, S.	Nev.	490	2,328
Lexington, G. S.	Mont.	70,615	430,827
Montana, Limited, S.	Mont.	——	274,973
Moulton, S. G.	Mont.	.....	310,792
Mount Diablo, S.	Nev.	.....	149,312
Navajo, S.	Nev.	——	82,894
New Hoover Hill, G. S.	N. C.	8,600	37,209
New Pittsburg, S.	Colo.	——	9,594
North Belle Isle, S.	Nev.	——	2,118
Ontario, S.	Utah	.....	901,259
Oxford, G.	N. S.	.....	1,905
Plymouth Consolidated, G.	Cal.	82,657	493,608
Rooks, G.	Vt.	——	28,383
South Yuba, G.	Cal.	——	1,168
Standard Consolidated, G.	Cal.	16,362	78,478
Stormont, S.	Utah	.....	53,379
Tombstone, G. S. L.	Ariz.	.....	290,804
Total		.....	7,435,186

G., gold; S., silver; L., lead; C., copper. Silver valued by the different companies from $1@$1.29 per ounce; gold, $20.67. *Not including value of lead and copper. †Royalty. ‡Net. —— No shipments during month mentioned.

MARKETS.

NEW YORK, Friday Evening, July 24.

Silver.

DATE.	London. Pence.	N. Y. Cents	DATE.	London. Pence.	N. Y. Cts.
July 18	49 3-16	106⅞	July 22	49 3-16	107
20	49 3-16	106⅞	23	49 3-16	107
21	49 3-16	106⅞	24	49 3-16	107

There is no change of any significance to be no ted in this week's silver market, either abroad or here, except that the advance in sterling exchange here has met the slight decline abroad.

Foreign Bank Statements.—The governors of the Bank of England, at their regular weekly meeting, made no change in the bank's minimum rate of discount, and it remains at 2 per cent. During the week, the bank lost £615,537 bullion; and the proportion of its reserve to its liabilities was reduced from 45⅝ to 44 13/16, against 44⅞ per cent at this date last year. July 23d, the bank lost £150,000 bullion on balance. The weekly statement of the Bank of France shows a gain of 4,982,000 francs gold and of 3,707,000 francs silver.

Copper.—The market, as usual at this season of the year, is very dull. Calumet & Hecla holds at 11½@12c. There is no prospect rationally for any decline in Lake copper for the present, although second hands may sell at 11c. Other brands: Baltimore sold at 10·35@10·40c.; Orford, 10·20c. bid, 10·40c. offered. The better qualities of copper made from Arizona ore go readily into consumption, and are not offered in the market. Dealers, having no power over Lake Superior copper, aim at making a wide difference between that and the price of Lake, so as to leave a larger margin of profit. The general production in this country, so far, has not been increasing, as against last year.

Another mine in Montana has given up the ghost. The Bell mine and smelter, run by Wallace & King, have been attached, and are in the sheriff's hands for debt. Readers of the ENGINEERING AND MINING JOURNAL will remember that this sad event was predicted in these columns about ten months ago, based on the Bell mine's report, the lower prices for copper, and the outrageous wages paid in Montana. (*See* MINING NEWS, Silver Bow County, Montana.)

Chili Bars fluctuated during the week from £43 15s. to £44. Best Selected has remained firm at £49.

Tin.—The market has been strong and irregular, both here and in London. The fluctuations have been as follows: Spot tin, July 18th, £94; 20th, £93 17s. 6d.; 21st, £94 5s.; 22d, £94 15s.; 23d, £95 2s. 6d.; 24th, £95 12s. 6d.; while the price for futures has advanced during the same period from £92 10s. to £94 10s.

The following prices are quoted here for spot: 22¼c., on the 18th inst.; 22·40c. on the 20th; 23c. on the 21st and 22d; 22@22½c. on the 23d and 24th.

Lead.—Little business has been done. Some six or seven hundred tons sold at from 4·10c.@4·15c. Soft Spanish lead sold in London to-day at £12 10s. Lead pipe remains firm at 5¾c., and Sheet-Lead, 6¾c.

Messrs. John Wahl & Co., of St. Louis, telegraph to us as follows to-day:

The market still retains the features that have prominently characterized it during the past few weeks, and shows no signs of weakness. Sales for the week amount to 250 tons Refined at 3·97½@4c., and 150 tons of Chemical at 3·95c.

Messrs. Everett & Post, of Chicago, telegraph to us as follows to-day:

Sellers have been asking a little more, but only a moderate amount of business has been transacted. Sales for the past week will probably foot up to 650 tons at 4·05c. Offerings are only moderate, being very light in the West. There is but little doing, and the demand is from hand to mouth only.

Spelter.—The market is firm at 4·40c. bid and 4·45@4·50c. asked, but business is dull. We quote Foreign at 4¾c., and Silesian at £13 15s.

Antimony.—Hallett's in London has remained at £37 during the week. Here, Hallett's is quoted at 9c., and Cookson's at 9½c.

Bismuth.—Worth from $2@$2.25 a pound.

Aluminium.—$8@$9 a pound; 10 per cent Aluminium Bronze Ingots, $1 a pound; Aluminium Silver, 75c. an ounce.

IRON MARKET REVIEW.

NEW YORK, Friday Evening, July 24.

American Pig.—The iron market continues extremely dull, and but few sales are reported. We may quote standard brands of Lehigh irons, tide, water, delivery, as follows: No. 1 X, $18@$17.50-No. 2 X, $16@$16.50; Gray Forge, $15@$14.50, with lower prices for other brands.

Scotch Pig.—The market remains unchanged. We quote Coltness in retail lots at $20, and Eglinton at $18. In Glasgow, Coltness remains firm at 48s. 3d.; and Eglinton at 41s.

Rolled Iron.—We continue to quote American Beams, 3c.; Foreign Beams, 2½@2¾c.; Angles, 1·9@2c.; and Tees, 2@2¼c.

Bar Iron.—The market is in its usual condition. We quote Common at 1·45@1·55c., and Refined 1·7@1·9c. Swedish iron remains at $70 a ton.

Wrought-Iron Pipe.—At the convention of pipe manufacturers, held at Pittsburg on the 23d, the selling price of all wrought-iron pipe, black or galvanized, was advanced from ½ to 4½ per cent on car-load lots. The trade is reported in a depressed condition. Fifteen firms were represented, and about 95 per cent of the output.

Plates.—We continue to quote Tank Iron, 2c.; Refined, 2½@2⅝c.; Flange, 3¼@3½c.; Steel Plates, Ship, 3c.; Tank, 2¾c.; Boiler, 3c.

Old Rails.—Prices remain at $16.

Steel Rails.—Occasional small transactions have been made at $27 at the mills.

Philadelphia. July 23.

[From our Special Correspondent.]

Twelve thousand tons of Spanish and African ores have arrived within a few days, and a number of cargoes are on the water. There is no particular activity in the Eastern Pennsylvania and New Jersey mines. There is no urgent need for ores. Quite a number of furnaces have been put in readiness for the fall demand; but so far, brokers have not been able, except in three or four cases, to secure enough business to warrant a resumption of work.

Pig-Iron.—Brokers and furnace agents admit that July has been a disappointing month. One or two sellers of special irons have done well and got good prices. No. 2 iron is sliding down. All inferior irons are weak. Standard irons are not shaded, because buyers do not want enough to make it an object to shade. Small lots of No. 1 sell at $18. No. 2 is scarcely quotable. Southern irons are contributing somewhat to the demoralization, and by Saturday iron will be sold at $13.50 Forge. Lehigh forge is $14.50@$15, with $16 for some few makes.

Foreign Irons.—Large ore arrivals. There is nothing doing in Bessemer or Spiegel or Scotch.

Muck-Bars.—No sales. Some offers at $26.

Blooms.—Both anthracite and charcoal quiet.

Merchant Iron.—Brokers representing interior mills have closed for some four hundred tons, common to medium, at 1·40@1·60c. Some iron sold at 1·35c. A good many puddling-furnaces have been thrown off during the past few days. The talk in iron offices inclines to the hopeful side, although it will be a week or two before any thing is done.

Nails.—The consumption of nails is steady, and prices for the lots taken up unchanged. Car-load lot buyers are the only parties that buy at bottom figures. Some improvement is observed in the local trade. Stocks are full enough, but, despite the continued suspension West, it is impossible to say that prices ar likely to be strengthened.

Plate and Tank.—Two manufacturers have booked two or three weeks' work, but irregularity is the rule. Straggling requirements, however, keep things moving along quietly at 2c. for Plates, 2⅛c. for Shell, 3⅛c. for Flange. Machine-shop demand is rather light, but two or three local shops doing big work will soon make extensive purchases.

Structural Iron.—Bridge iron orders are on the increase. Bridge builders from Western railroads are in negotiation for supplies. One manufacturer has inquiries for several hundred tons. Angles, 1·90@2c.; Tees, 2½c.; Beams, and Channels, 3c.

Steel Rails.—A few small lots were ordered at $27.50. Large lots in occasional demand at $27. Two orders, amounting to eight thousand tons, have been placed.

Old Rails.—Small lots are called for at $17.

Scrap.—Selected lots are taken at $17.50@$18.50.

Pittsburg. July 24.

Dispatches to the Metal Exchange to-day state that pig-iron shows but slight change since last report, as relates to prices or demand, being confined to the lots required for mixtures. Parties are holding off for better prices, but there are enough who are willing to sell at present figures to supply the demand. The following are the sales for the week:

200	tons	Gray Forge,	Lake ore	.....	@	$14.50	4 mos.
100	"	"	"	.....		14.75	"
100	"	"	"	.....		14.50	"
1000	"	"	native "	.....		14.35	"
350	"	"	"	.....		14.25	cash.
300	"	"	"	.....		14 50	4 mos.
150	"	"	"	.....		14.00	cash.
50	"	Foundry No. 2	native ore	..		15.00	"
100	"	"	No. 1 charcoal	.....		22.00	4 mos.

COAL TRADE REVIEW.

Statistics.

Production Anthracite Coal for week ended July 18th, and year from January 1st:

TONS OF 2240 LBS.	1885.		1884.	
	Week.	Year.	Week.	Year.
P. & Read. RR. Co..	278,011	5,419,096	1,216	5,209,710
L. V. RR. Co.....	159,748	2,756,722	.....	2,853,630
D., L. & W. RR. Co.	119,740	2,182,409	43,230	2,431,073
D. & H. Canal Co..	82,009	1,803,457	....	1,756,740
Penna. RR.:				
N. & West Br. RR.	19,786	612,748	24,005	445,774
S. H. & W. B. RR.	5,543	119,519	5,057	118,814
P. & N. Y. RR....	8,989	203,596	.... ..	265,585
Penna. Coal Co.....	32,180	638,976	8,814	606,069
Penna. Canal Co....	12,754	155,104	12,694	181,427
Shamokin Div., N. C. RR.....	18,240	492,539	20,850	524,966
Lykens Valley.....	*10,000	266,887	11,522	288,002
N.Y., L.E. & W.RR.	.. ....	†259,802	....	†164,871
Total...	747,006	14,910,855	127,388	14,846,661
Increase..	619,618	64,194	....	.. ..
Decrease	.. ...	.....	....	... .

The above table does not include the amount of coal consumed and sold at the mines, which is about six per cent of the whole production.

Production for corresponding period:

1880.....	11,107,215	1882.....	13,901,634
1881.....	13,663,325	1883	14,712,252

* Estimated. † Shipments to June 1st.

Chesapeake & Ohio Railroad Company's report of total output and distribution of coal and coke. Received from mines on line of Chesapeake & Ohio Railroad (including mines on Lexington Division) for the week ended July 14th and year from January 1st. Tons of 2000 pounds:

	Week.		Year.	
Kind of coal.	1885.	1884.	1885.	1884.
Cannel.....	716	681	10,951	8,072
Gas....	5,014	6,656	210,247	167,345
Splint and block	3,397	1,481	82,041	41,447
New River, etc.	13,564	6,515	294,538	232,744
Coke....	2,008	1,340	63,305	30,501
Total.....	24,699	16,673	661,082	480,109

Production Bituminous Coal for week ended July 18th, and year from January 1st:

Tons of 2000 pounds, unless otherwise designated.

EASTERN AND NORTHERN SHIPMENTS.

	1885.		1884.	
	Week.	Year.	Week.	Year.
Philadelphia & Erie RR	1,926	18,674	.....	.....
*Cumberland Region, Md.....	59,763	1,429,904	67,967	1,469,692
*Barclay Region, Pa.				
Barclay RR.....	3,589	130,471	4,479	174,773
*Broad Top Region, Pa.				
Huntington & Broad Top RR.....	2,734	89,606	2,812	103,350
East Broad Top....	.....	.....	.....	.....
Clearfield Region, Pa.				
Snow Shoe.....	1,892	84,687	3,546	100,712
Karthaus (Keating)	1,772	71,501	2,273	17,544
Tyrone & Clearfield	50,100	1,634,143	63,240	1,679,771
Alleghany Region, Pa.				
Gallitzin & Mountain.....	9,197	272,921	7,171	208,377
Total..... 130,973		3,731,907	151,488	3,754,219

* Tons of 2240 lbs.

WESTERN SHIPMENTS.†

Pittsburg Region, Pa.				
West Penn RR.....	2,754	134,644	4,091	155,510
SouthwestPenn.RR.	1,371	56,538	1,548	79,266
Pennsylvania RR...	4,483	108,685	4,711	154,668
Westmoreland Region, Pa.				
Pennsylvania RR...	24,228	600,221	23,216	676,664
Monongahela Region, Pa.				
Pennsylvania RR...	9,828	134,033	2,320	84.475
Total.....	42,664	1,034,121	35,886	1,140,583
Grand total	173,637	4,766,028	187,374	4,894,802

†Considerable gas-coal shipped East, of which no division is made in report.

Production of Coke on line of Pennsylvania RR. for week ended July 18th, and year from January 1st:

Tons of 2000 pounds.

	1885.		1884.	
	Week.	Year.	Week.	Year.
Alleghany Region.	4,489	101,749	2,724	72,504
West Penn. RR....	1,196	25,342	19	24,726
Southwest Penn. RR	36,210	1,057,559	31,421	1,217,896
Penn. & W. Region	5,489	127,555	3,930	102,834
Monongahela	2,507	54,814	957	43,874
Pittsburg Region.	.. ...	.....	.....	136
Snow Shoe.....	221	8,337	522	12,439
Total....	50,112	1,375,356	39,573	1,474,400
Decrease.....		99,053	.....	.....

Anthracite.

NEW YORK, Friday Evening, July 24.

The week under review shows no improvement in demand, and while an increased business is necessarily nearer at hand, the general outlook for producer of coal has not improved, owing to other causes.

The principal cause of trouble is overproduction. The stocks are becoming very large; they are in cars, in boats, on wharves, and everywhere where coal can be stored. The allotment for this month has been much in excess of the demand, and a production in August, 450,000 tons greater, must bring disaster to the trade, if an attempt is made to move it. As we stated a week ago, a million tons should be cut off.

There is a movement on foot to bring about a curtailment of production, and, so far as we can understand, all active members of the combination are willing to submit to it, excepting the Delaware, Lackawanna & Western and Reading companies. These companies each assert, it is said, that they were not allowed a sufficient percentage in making up the slate, to supply their natural trade, and that they are perfectly able to handle their entire quotas. Under these conditions, they think that they should not be asked to reduce their outputs, and that such companies as were given higher percentages than they were entitled to, and are unable to handle the products, should shut down until they clear up stocks or accumulate sufficient orders to enable them to go ahead.

The situation is a critical one, and can not remain as it is much longer. Prices of coal will soon go very much lower, or else, by some action of the companies to reduce the supply to the actual requirements of the market, they will steadily advance as stocks disappear.

In a manner, the extremely cold weather of last winter has been an injury to the trade. The large and unusual demand caused thereby has blinded the managers to the poverty of the people and the depression in all industry, and has caused them to expect a much larger business than general conditions warrant. If the combination had been made on a 25,000,000 ton basis, subject to a majority vote to increase the monthly allotments, the trade would be in a much better position, provided the agreement had been kept. The demand is the mountain, and the companies had better make up their minds to go to it promptly. Now that the trade does not point to a production of 31,000,000 tons, the managers had better acknowledge the situation. They have made so many mistakes and blunders in the past that under such an action the public would begin to think better of them, and believe that they were coming to their senses.

The negotiations between Mr. Vanderbilt and the Pennsylvania Railroad are now considered to be of the most serious character. The Philadelphia *Times* says: "The agreement is an alliance offensive and defensive in all that the term implies." As Mr. Vanderbilt is a very large stockholder in Reading, it is thought probable that his interest may be united with such interests as the Pennsylvania Railroad can control, and that the Reading Company may practically fall into the hands of the Pennsylvania and become an enormous feeder to that wonderful system. That company is primarily a carrier, and with the large tonnage that Reading could furnish it, it could well afford to carry coal at prices much lower than have heretofore prevailed for anthracite coal. The company is already earning fixed charges and good dividends on its capital, so that the new tonnage would not be handicapped with $1@$1.50 a ton fixed charges ahead of dividends, as is the case with most of the other coal-carrying companies.

Just what the policy of the Pennsylvania Railroad would be in case it secured control of the Reading, it is hard to say; but those who are best able to judge of what it would be say that the company would open the mines and operate them to the fullest extent, so long as it could get the cost of mining and a moderate profit per ton in transportation. At all events, the company would control the anthracite coal trade, and if a combination existed, it would have to be firmly maintained on a basis entirely satisfactory to the Pennsylvania Railroad, and on one that would permit the trade to have a natural expansion and not be restricted by an effort to cover the past follies and crimes of the past managements of the several companies.

Mr. John H. Jones, official accountant, gives the fol-

lowing statement of the anthracite coal tonnage for the month of June, 1885, compared with the same period last year. The statement includes the entire production of anthracite coal, excepting that consumed by employés, and for steam and heating purposes about the mines :

COMPANIES.	June, 1885.	June, 1884.	Difference.
Phila. & Reading RR...	935,447	708,689	I. 226,758
Lehigh Valley RR.....	470,918	386,044	I. 84,873
Del., Lack. & West. RR.	392,572	342,459	I. 50,113
Del. & Hud. Canal Co..	255,416	206,611	I. 48,804
Pennsylvania RR.....	282,852	276,919	I. 5,932
Pennsylvania Coal Co.	106,787	33,998	I. 22,788
N. Y., L. E. & W. RR...	46,040	24,459	I. 21,580
Total	2,490,032	2,029,179	I. 460,852

COMPANIES.	For Year 1885.	For Year 1884.	Difference.
Phila. & Reading RR..	4,727,793	4,707,532	I. 20,261
Lehigh Valley RR.....	2,355,556	2,590,643	D. 235,086
Del., Lack. & West. RR.	1,927,877	2,239,088	D. 311,210
Del. & Hud. Canal Co..	1,310,967	1,422,550	D. 111,583
Pennsylvania RR	1,550,506	1,444,430	I. 106,075
Pennsylvania Coal Co..	568,821	590,139	D. 21,317
N. Y., L. E. & W. RR...	259,802	164,871	I. 94,930
Total..... ..	12,701 322	13,159,253	D. 457,931

The stock of coal on hand at tide-water shipping points, June 30th, 1885, was 582,163 tons ; on May 31st, 1885, 525,641 tons ; increase, 56,522 tons.

These figures show that the Reading Company exceeded its quota by 63,242 tons ; the Pennsylvania Railroad, by 582,505 tons ; and the Erie, by 76,302 tons ; while the other companies failed to mine and handle their production.

Bituminous.

There is practically nothing doing in this coal, except upon old contracts. Those who were not successful in booking large orders early in the season are making very low offers to secure the smallest kind of business now. The steamship trade is very quiet, owing to the small amount of freight offering abroad, which causes steamships to bring sufficient coal to see them through on the round trip. Owing to the scarcity of tonnage this way, there are not nearly as many "tramps" coming here as usual.

The Clearfield men somehow think that by the Pennsylvania Railroad acquiring a control of the Beech Creek road they will be able to harmonize the bituminous interests and advance prices. They do not seem to realize that the Vanderbilt-Pennsylvania alliance is throwing down the glove to the Baltimore & Ohio, and that one of the greatest fights that trade has ever seen is probable. Furthermore, the Pennsylvania does not own the Norfolk & Western and the Chesapeake & Ohio roads, which have been troublesome competitors with meritorious products.

Philadelphia. July 23.

[From our Special Correspondent.]

It would be difficult to say any thing new about the coal trade. The local trade remains very dull. The shipments continue brisk to the East, and absorb all the coal reaching tide except chestnut. Broken coal remains very scarce. Vessels are plentiful, and rates uniformly $1 to Boston ; 75c. and discharge to Bath and Portland ; 50c. to Norfolk ; 60c. to Richmond ; and 90c. to Providence. Small vessels of light draught secure from 10c. to 25c. better.

The Schuylkill quota is expected to be filled by Saturday, and the mines will then stop until August 1st.

Buffalo. July 23.

[From our Special Correspondent.]

There was a large attendance of coal shippers and dealers at the Merchants' Exchange yesterday forenoon. The meeting was informal and of course private. The subject was lake freight rates, and the result apparently was a determination to pay no higher price than 50 cents a ton to Chicago and Milwaukee.

"The coal trade is dead, dead, dead," said the representative of one of the large anthracite companies ; "that is all I have to communicate." Another said, in substance, "Coal is not selling ; it is only moved from point to point, ready for purchase and delivery." A third man spoke thus: "The season for purchasing will be late, in consequence of the hesitancy of buyers ; and if there should arise a good or heavy demand, it will be so late in the season that there will be no time to ship before navigation closes, and a large advance in prices will inevitably result." A fourth : "So much coal will be wanted during the fall and winter ; therefore, buyers must purchase now or later ; if later, they will have to pay more money for it. That's a sure prophecy, and mind you believe it."

A meeting of the bituminous coal combination will be held at Buffalo next Tuesday. This branch of the business is said to be sadly demoralized again, as outside competition has shown its wrinkled front. The schedule rate of the pool is $2.25 a ton on board cars at Buffalo ; the Pittsburg dealers are now selling at $1.75, and lower than these figures, if necessary to secure a customer ; while the quality is reported to be as good as, and in some instances better than, can be found among the combination dealers. The Pittsburg coal comes over the Lake Shore and the Buffalo, New York & Philadelphia railroads, paying the regular rates. It is asserted that the discovery and utilization of natural gas has had a great deal to do with this movement. It is estimated by two well-known producers that Buffalo is getting one half of its bituminous coal from Pittsburg. The question now arises, How long can the Pittsburg miners dig coal and bring it here for $1.75 a ton ? A drummer offered coal yesterday, mined 100 miles beyond Pittsburg, at the price named, and he was developing a plan to send it Westward by lake.

The Pioneer Co-operative Society held a meeting lately, and decided to furnish its members with hard coal at the following prices, delivered within a radius of three miles from City Hall: Egg, $4 ; Grate, $4.10 ; Stove, $4.35 ; Chestnut, $4.30, per ton of 2000 pounds. The connundrum agitating the minds of dealers is : Where will the Society obtain its supplies ?

Mr. James Ash will supply the School Department with coal from September 1st, 1885, to September 1st, 1886, at his bid of $4.60 for Chestnut, and $4.25 for Stove, Egg, and Grate. The award was made last Monday.

The Lehigh Valley Railroad Company is negotiating for necessary land near the Tifft Farm here, to construct overhead and grade switches, to connect with the Nickel Plate Railroad on the north side of its line, for the exchange of business and handling coal.

From present indications, South Buffalo (the Tifft Farm improvements and adjacent property) is destined to become another South Chicago, in consequence of the growth of the lumber, iron, and coal interests in that locality. The Lehigh Valley people have proved themselves to be both liberal and enterprising in the development of a region that for many years was deemed worthless.

The lake carrying trade never was so dull as it is at present. Since my last letter, for several days there were no coal charters to Milwaukee and Chicago. On Monday, there was a fair inquiry for tonnage, but no available vessels on the market at 50 cents a ton. On Tuesday, not a single charter was reported to any place. Yesterday, shippers would not pay any advance, and nothing was done, as carriers were firm. This morning, shippers again stoutly refused to pay any better rate than 50 cents, and vessel men would not place any tonnage at that figure. The stock of coal is accumulating, although shippers say that there is no pressure to hurry it forward.

The shipments of coal by lake from Buffalo, from July 16th to 22d, both days inclusive, were 34,760 tons ; namely, 11,270 to Chicago, 5900 to Milwaukee, 540 to Toledo, 540 to Detroit, 10,200 to Duluth, 680 to Racine, 300 to East Saginaw, 520 to Kelly's Island, 1500 to Superior City, 1860 to Washburn, L. S., and 1450 to Ashland, L. S. The freight engagements were at the following rates : 50 cents to Chicago and Milwaukee, 40 cents to Duluth, Superior City, and Washburn, 25 cents to East Saginaw and Toledo, 20 cents to Detroit. A charter was reported at 50 cents to Port Arthur this morning. The only coal shipment by canal the past week was one load to New York at 85 cents gross, free on and off, and one load to New York $1.05, captain to pay unloading only. The nominal rates were 60 cents gross to Syracuse, 80 cents net to Schenectady, the captains to pay for unloading only.

Coal, Charlotte to Chicago, quoted at $1.10 per gross ton.

The managers of the Portage Lake Canal propose to reduce tolls from 25 to 50 per cent. This brings rates down to 50 cents for first and second class freight, 25 cents for third and fourth class, 15 cents for copper, and 7 cents for coal.

The receipts of coal at Duluth for the week ended July 18th were 10,421 tons.

The shipments of coal from Buffalo by lake thus far this season aggregate about 585,000 tons.

Boston. July 23.

[From our Special Correspondent.]

The market has been quiet with the anthracite agents this week, but, considering the season, a fair volume of trade is really transacted. There continues to be the same difference between New York and Philadelphia reports and those given by our local agents. The former insist on large stocks, and there are now some indications of weakening among those who have all along been bullish. And yet there are no signs of heavy stocks, when viewed from this end. Nearly all favorably known special coals are in short supply, except in the smaller sizes, and egg, broken, and stove sizes of company coal appear to be in only moderate supply, although there is no scarcity of stove. Nevertheless, even conservative authorities are advising restriction in August, fearful lest the demand will not be sufficient to take the full month's product, and that further weakness will result unless there be a curtailment. We hear of no material breaking away in prices. It is claimed that very little coal is sold below $3.85 f. o. b. at New York by company agents, and that only a few lots have been disposed of at $3.65@$3.75.

There is a dull state of affairs in the bituminous branch of the market, but transactions are kept very shady. As showing this, we note that a sale of 12,000 tons of Cumberland has within a short time been made to a New England railroad, and that another railroad contract supposed to have been closed long ago has lately been closed in reality, although to the parties first mentioned as obtaining the contract. Small sales by single cargo are made at irregular prices, say from $3.25@$3.50 delivered. Gas-coal is about at a standstill. Good buyers have paid in the vicinity of $4.10 delivered for their gas-coal, on the average. Culm coal moves slowly at $2.30 delivered.

Low rates prevail in freights. We hear that the lately established coastwise commission is endeavoring to better matters. It is securing signatures of vessel-owners who will agree to lay up vessels. The loss of the Perkiomen, one of the Philadelphia & Reading's largest colliers, will be felt by it at this time, as it was keeping its fleet very busy on Eastern deliveries. There are plenty of sailing vessels at current rates. We quote :

New York, 80@85c. ; Philadelphia, $1@$1.05 ; Baltimore, $1.10@$1.15 ; Newport News, $1.10@$1.15 ; Richmond, $1.20 ; Cape Breton, $1.50@$1.75.

The retail movement is a trifle larger, but there is abundant room for improvement. Prices are unchanged. We quote :

White ash, furnace and egg	$4.75@$5.00
" " stove and nut	5.25@ 5.50
Shamokin, egg	6.00
" stove	6.25
Lorberry, egg and stove	6 50@ 7.00
Franklin, egg and stove	7.25@ 7.75
Lehigh, furnace, egg, and stove	5.25@ 5.50
" nut	5.50@ 5.75

We quote wharf prices as follows : Stove, $4.50@$4.75 ; Broken and Egg, $4@$4.50.

Chicago. July 22.

[Special Correspondence.]

In my letter last week, I should have said the "favorable signs" applied only to the country trade. The retail trade in this city is still in very bad shape. One dealer has distributed posters advising the public to buy their coal now, and quoting Egg at $5.75 and Stove and Nut at $6 delivered. Several large sales are reported at $5.75 for all sizes delivered. One school contract for 600 tons egg, stove, and chestnut (District No. 2, Lake and Hyde Park) was awarded to P. J. Flynn & Co., at $5.45 delivered as called for. Country dealers are still holding back, but an occasional one gives an order, realizing that thirty days from now there will be a rush. Some very low prices have been quoted ; but there seems to be a disposition growing to stiffen up on car prices, and not get loaded too heavy with cheap orders. There has been a steady decrease in the receipts of vessel coal since May 1st, as compared with 1884, amounting to over 39,000 tons, while the rail receipts since May 1st this year have increased about 7000 tons over the same time in 1884. The increased stock on hand May 1st this year makes the total increase in stock to the present time over 1884 about 29,000 tons. To offset a portion of this, there has been an increase in shipments to the

DIVIDEND-PAYING MINES.

	Name and Location of Company.		Capital Stock.	Shares. No.	Shares. Par value.	Assessments. Total levied to date.	Assessments. Date and amount per share of last.			Dividends. Total paid to date.	Dividends. Date and amount per share of last.		
1	Adams, s. L.	Colo.	$1,500,000	150,000	$10	*	.. ..	.. ..	.. ..	$217,500	July	1885	.10
2	Alice, s. C.	Mont	10,000,000	400,000	25	*	.. ..	.. ..	.. ..	625,000	Jun.	1885	.06
3	Amie Con., s. L.	Colo	5,000,000	500,000	10	*	.. ..	.. ..	.. ..	330,000	Oct.	1883	.05
4	Atlantic, c.	Mich	1,000,000	40,000	25	$240,000	Apl.	1875	$1.00	280,000	Feb.	1885	.50
5	Argenta, s.	Nev.	10,000,000	100,000	100	285,000	Apl.	1884	.10	40,000	Feb.	1880	.20
6	Barbee & Walker, s.	Utah	1,000,000	100,000	10	*	.. ..	.. ..	.. ..	60,000	Nov	1880	.10
7	Bassick, G. S.	Colo.	10,000,000	100,000	100	*	.. ..	.. ..	.. ..	400,000	Mar.	1884	$1.00
8	Belle Isle, s.	Nev.	10,000,000	100,000	100	120,000	Mar.	1884	.20	300,000	Dec.	1879	.25
9	Belcher, G. S.	Nev.	10,400,000	104,000	100	2,186,135	Apl	1883	.25	15,397,000	Apl.	1876	1.00
10	Big B'nd Hydraulic, G	Dak.	1,000,000	200,000	5	*	.. ..	.. ..	.. ..	144,000	May	1885	.03
11	Black Bear, G.	Cal.	3,000,000	30,000	100	22,500	Dec.	1884	.25	895,000	May	1883	.20
12	Bodie Con., G.	Cal.	10,000,000	100,000	100	275,000	Dec.	1883	.50	1,695,000	Apl.	1885	.50
13	Bonanza Developm't	C & M	3,000,000	600,000	10	.. ..	.. ..	.. ..	.. ..	135,000	Oct.	1882	.15
14	Bonanza King, Cons.	Cal.	1,000,000	100,000	10	*	.. ..	.. ..	.. ..	185,000	Feb.	1880	.10
15	Boston & Mont. G.	Mont	2,000,000	200,000	10	*	.. ..	.. ..	.. ..	310,000	Jan.	1883	.05
16	Breece, s.	Colo	5,000,000	200,000	25	*	.. ..	.. ..	.. ..	2,000	Feb.	1880	.01
17	Bulwer, G.	Cal	1,000,000	100,000	100	20,000	Jan	1885	.20	173,000	Jan.	1884	.10
18	Calumet & Hecla, C.	Mich	2,500,000	100,000	25	.. ..	.. ..	.. ..	.. ..	27,350,000	Jun.	1885	7.00
19	Carbonate Hill, S. L.	Colo.	2,000,000	200,000	10	*	.. ..	.. ..	.. ..	80,000	Apl.	1884	.05
20	Carbon Con., S.	Colo.	1,000,000	100,000	10	*	.. ..	.. ..	.. ..	50,000	Mch	1880	.10
21	Castle Creek, G.	Idah.	100,000	100,000	1	.. ..	.. ..	.. ..	.. ..	51,000	Oct.	1883	.03
22	Cataipa, S. L.	Colo.	3,000,000	300,000	10	*	.. ..	.. ..	.. ..	270,000	May	1884	.10
23	Central, C.	Mich	500,000	20,000	25	100,000	Sept	1861	.06	1,710,000	Feb.	1885	5.00
24	Christy, S.	Utah	10,000,000	100,000	100	.. ..	.. ..	.. ..	.. ..	10,000	Jun.	1885	.10
25	Chrysolite, S. L.	Colo.	10,000,000	200,000	50	*	.. ..	.. ..	.. ..	1,650,000	Dec.	1884	.25
26	Colorado Central, S. L.	Colo.	3,000,000	300,000	10	*	.. ..	.. ..	.. ..	45,000	Aug.	1885	.05
27	Con. Bobtail, G.	Colo.	1,136,630	227,326	5	*	.. ..	.. ..	.. ..	147,762	Mch	1880	.10
28	Con. Gold Mining, G.	Ga.	500,000	100,000	5	*	.. ..	.. ..	.. ..	108,000	Nov	1884	.02
29	Contention, s.	Ariz.	12,500,000	250,000	50	.. ..	.. ..	.. ..	.. ..	‡2,587,000	Dec.	1884	.25
30	Copper Queen, C.	Ariz.	2,500,000	250,000	10	*	.. ..	.. ..	.. ..	1,350,000	Dec.	1884	.50
31	Crescent, S. L. G.	Utah	15,000,000	300,000	25	‡	.. ..	.. ..	.. ..	150,000	Oct.	1883	.05
32	Crown Point, G. S.	Nev..	10,000,000	100,000	100	2,875,000	Feb.	1882	.25	11,588,000	Jan.	1875	2.00
33	Deadwood-Terra, G.	Dak.	5,000,000	200,000	25	*	.. ..	.. ..	.. ..	§900,000	Jan.	1883	.10
34	Derbec B. Grav., G. S.	Cal.	10,000,000	10,000	100	90,000	Dec.	1881	.10	70,000	Jun.	1885	.10
35	Dunkin, S. L.	Colo.	5,000,000	200,000	25	*	.. ..	.. ..	.. ..	220,000	Sept	1884	.05
36	Eureka Con., G. S. L.	Nev.	5,000,000	50,000	100	350,000	Jan.	1884	1.00	4,817,500	July	1882	.25
37	Evening Star, S. L.	Colo	500,000	50,000	10	*	.. ..	.. ..	.. ..	1,400,000	Nov	1883	.50
38	Excelsior, G.	Cal.	10,000,000	100,000	100	460,000	Sept	1884	.50	875,000	Oct.	1880	.25
39	Father de Smet, G.	Dak.	10,000,000	100,000	100	200,000	Nov	1878	1.00	970,000	Jun.	1885	.20
40	Franklin, C.	Mich	1,000,000	40,000	25	220,000	Jun	1871	....	480,000	Jun.	1885	1.00
41	Freeland, G. S. C.	Colo.	5,000,000	200,000	25	*	.. ..	.. ..	.. ..	90,000	July	1885	.10
42	Fresno Enterprise, G.	Cal.	5,000,000	100,000	50	.. ..	.. ..	Mch	1883	110,000	July	1882	.10
43	Gem, S.	Colo.	125,000	125,000	1	.. ..	.. ..	.. ..	.. ..	23,750	May	1883	.02
44	Glen, S.	Colo.	100,000	100,000	1	.. ..	.. ..	.. ..	.. ..	7,000	May	1883	.01
45	Gould & Curry, G. S.	Nev.	10,800,000	108,000	100	3,856,800	Jun	1885	.40	3,826,000	Oct.	1870	10.00
46	Grand Central, S.	Ariz.	1,000,000	100,000	10	.. ..	.. ..	.. ..	.. ..	625,000	Dec.	1882	.25
47	Grand Prize, S.	Nev.	10,000,000	100,000	100	530,000	Nov	1884	.30	495,000	Mar.	1884	.25
48	Granite, S.	Colo	125,000	125,000	1	.. ..	.. ..	.. ..	.. ..	6,250	May	1883	.01
49	Granite Mountain, S.	Mont	10,000,000	400,000	25	.. ..	.. ..	.. ..	.. ..	260,000	July	1885	.10
50	Green Mountain, G.	Cal.	1,250,000	125,000	10	*	.. ..	.. ..	.. ..	212,000	Nov.	1881	.07½
51	Hale & Norcross, G. S	Nev..	11,200,000	112,000	100	4,594,000	May	1885	.50	1,598,000	Apl	1871	5.00
52	Hall-Anderson, G.	N. S.	150,000	150,000	1	.. ..	.. ..	.. ..	.. ..	7,000	Jan.	1882	.05
53	Hecla Con., S.	Mont	1,500,000	30,000	50	.. ..	.. ..	.. ..	.. ..	792,500	Apl.	1885	.50
54	Hel'a Mg & Red, G. S. L.	Mont	3,000,000	600,000	5	*	.. ..	.. ..	.. ..	72,000	Jan.	1885	.06
55	Henriett, L.	Colo.	.. ..	270,000	..	.. ..	.. ..	.. ..	.. ..	27,000	Feb.	1883	.10
56	Holyoke, G.	Colo.	200,000	200,000	1	.. ..	.. ..	.. ..	.. ..	52,000	Nov	1883	.02
57	Homestake, G.	Dak.	12,500,000	125,000	100	200,000	July	1878	1.00	2,831,250	July	1885	.30
58	Hope, S.	Mont	400,000	8,000	50	*	.. ..	.. ..	.. ..	158,252	Oct.	1884	1.50
59	Horn-Silver, S. L.	Utah	10,000,000	400,000	25	*	.. ..	.. ..	.. ..	4,000,000	Nov.	1884	.50
60	Idaho, G.	Cal.	310,000	3,100	100	.. ..	.. ..	.. ..	.. ..	3,620,800	Apl.	1885	7.50
61	Independence, S.	Nev..	10,000,000	100,000	100	300,000	Jan.	1885	.15	225,000	Sept	1879	.25
62	Indian Queen, S.	Nev..	250,000	125,000	2	.. ..	.. ..	.. ..	.. ..	368,750	July	1883	.03
63	Inyo, G.	Cal..	500,000	100,000	5	*	.. ..	.. ..	.. ..	45,000	Apl.	1882	.05
64	Iron-Silver, S. L.	Colo.	10,000,000	500,000	20	*	.. ..	.. ..	.. ..	1,400,000	July	1885	.20
65	Jackson, G. S.	Nev.	5,000,000	50,000	100	10,000	Nov.	1880	.20	20,000	Jun.	1885	.10
66	Jacuistita, S.	Mex.	10,000,000	100,000	100	.. ..	.. ..	.. ..	.. ..	1,200,000	Feb.	1885	.50
67	Kentuck	Nev..	3,000,000	30,000	100	342,000	Nov	1881	.30	1,288,000	July	1884	.10
68	La Plata, S. L.	Colo.	2,000,000	200,000	10	*	.. ..	.. ..	.. ..	610,000	Sept	1882	.30
69	Leadville, S. L.	Colo	4,000,000	400,000	10	*	.. ..	.. ..	.. ..	370,000	July	1885	.05
70	Lexington, G. S.	Mont	4,000,000	40,000	100	*	.. ..	.. ..	.. ..	565,000	Jan.	1885	2.00
71	Little Chief, S. L.	Colo	10,000,000	200,000	50	*	.. ..	.. ..	.. ..	780,000	Mch	1885	.10
72	Little Pittsburg, S. L.	Colo.	20,000,000	200,000	100	*	.. ..	.. ..	.. ..	1,050,000	Mch	1880	.50
73	Marguerite, G.	Cal..	500,000	25,000	20	.. ..	.. ..	.. ..	.. ..	18,750	Oct.	1882	.25
74	Martin White, S.	Nev.	10,000,000	100,000	100	1,100,000	Jan	1885	.25	90,000	July	1879	.30
75	Minas Nuevas, S.	Mex.	300,000	100,000	3	*	.. ..	.. ..	.. ..	20,000	July	1883	.10
76	Morning Star, S. L.	Colo.	1,000,000	100,000	10	.. ..	.. ..	.. ..	.. ..	525,000	July	1884	.25
77	Moulton, S. C.	Mont	2,000,000	400,000	5	*	.. ..	.. ..	.. ..	140,000	Apl.	1885	.07½
78	Mount Pleasant, G.	Cal.	150,000	150,000	1	*	.. ..	.. ..	.. ..	105,000	Mar.	1884	.10
79	Mt. Diablo, S.	Nev	5,000,000	50,000	100	137,500	Jun.	1880	2.00	80,000	July	1885	.20
80	Napa, Q.	Cal..	700,000	100,000	7	.. ..	.. ..	.. ..	.. ..	290,000	Jan.	1883	.10
81	Navajo, G. S.	Nev..	10,000,000	100,000	100	260,000	May	1885	.25	325,000	Feb.	1885	.25
82	N. Hoover Hill, G. S.	N. C.	300,000	120,000	2½	*	.. ..	.. ..	.. ..	7,500	May.	1885	.06⅔
83	New York Hill, G.	Cal..	5,000,000	50,000	100	55,000	Mch	1878	.30	215,000	Aug.	1882	.10
84	New York & Colo., G.	Colo.	1,250,000	50,000	25	.. ..	.. ..	.. ..	.. ..	25,000	July	1879	.10
85	Northern Belle, S.	Nev..	5,000,000	50,000	100	425,000	Jan.	1884	8.50	2,400,000	Apl.	1883	50
86	North Belle Isle, S.	Nev..	10,000,000	100,000	100	105,000	Jan.	1884	.10	30,000	Aug.	1881	.15
87	Ontario, S. L.	Utah	15,000,000	150,000	100	.. ..	.. ..	.. ..	.. ..	6,575,000	July	1885	.50
88	Ophir, G. S.	Nev..	10,000,000	100,000	100	3,900,800	Feb.	1885	50	1,595,000	July	1882	1.00
89	Original, S. C.	Mont	1,500,000	60,000	25	*	.. ..	.. ..	.. ..	114,000	Oct.	1884	.05
90	Osceola, C.	Mich	1,250,000	50,000	25	480,000	Apl.	1876	1.60	972,500	Sept	1884	25
91	Oxford, G.	N. S.	125,000	125,000	1	*	.. ..	.. ..	.. ..	36,000	Apl.	1884	.05
92	Paradise Valley, G. S.	Nev.	10,000,000	100,000	100	47,000	Mar.	1882	.15	50,000	Oct.	1884	.10
93	Pleasant Valley, G. S.	Cal.	10,000,000	100,000	100	40,000	Mar.	1884	.10	30,000	Dec.	1882	.05
94	Plymouth Con., G.	Cal..	5,000,000	100,000	50	*	.. ..	.. ..	.. ..	1,300,000	July	1885	.50
95	Prussian, S. L.	Colo	1,500,000	150,000	10	.. ..	.. ..	.. ..	.. ..	132,000	Jan	1883	.10
96	Quick Iiver, pref., Q	Cal..	4,300,000	43,000	100	.. ..	.. ..	.. ..	.. ..	666,900	Feb.	1884	.30
97	" com., Q	Cal..	5,700,000	57,000	100	.. ..	.. ..	.. ..	.. ..	151,000	July	1882	.40
98	Quincy, C.	Mich	1,000,000	40,000	25	200,000	Dec.	1862	....	4,270,000	July	1885	2.00
99	Richmond, S. L.	Nev..	1,350,000	54,000	25	*	.. ..	.. ..	.. ..	4,110,587	Aug.	1884	1.25
100	Rising Sun, S.	Dak..	750,000	150,000	5	*	.. ..	.. ..	.. ..	52,000	May	1881	.07½
101	Robinson Bar, G.	Idah.	100,000	100,000	1	*	.. ..	.. ..	.. ..	8,000	Dec.	1882	.03
102	Robinson Con., S. L.	Colo	10,000,000	200,000	50	.. ..	.. ..	.. ..	.. ..	575,000	Nov.	1881	.50
103	Robert E. Lee, S. L.	Colo.	5,000,000	500,000	10	.. ..	.. ..	.. ..	.. ..	100,000	Dec.	1882	.10
104	Rooks, G.	Vt..	500,000	50,000	10	*	.. ..	.. ..	.. ..	61,000	Apr	1885	.30
105	San Francisco, C.	Cal..	5,000,000	50,000	100	45,000	Sept	1880	.50	20,000	Feb.	1883	.05
106	Savage, S.	Nev..	11,200,000	112,000	100	5,988,000	Jun.	1885	.50	4,460,000	July	1869	3.00
107	Security L Mg, Mfg	Colo.	1,000,000	100,000	10	*	.. ..	.. ..	.. ..	50,000	July	1884	.....
108	Shoshone, G.	Idah.	150,000	150,000	1	.. ..	.. ..	.. ..	.. ..	7,500	Apl.	1883	.01
109	Sierra Buttes, G.	Cal..	225,000	22,500	10	.. ..	.. ..	.. ..	.. ..	1,450,933	Apl.	1885	.12½
110	Sierra Bella, S.	N. M.	1,000,000	200,000	5	.. ..	.. ..	.. ..	.. ..	30,000	May	1884	.15
111	Sierra Grande, S.	N. M.	2,000,000	400,000	5	.. ..	.. ..	.. ..	.. ..	860,000	Sept	1884	.25
112	Sierra Nevada, G. S.	Nev..	10,000,000	100,000	100	5,872,698	Jun.	1885	.25	102,000	Jan.	1871	1.00
113	Silver Cord, G. S. L.	Colo.	4,500,000	450,000	10	.. ..	.. ..	.. ..	.. ..	225,000	Nov	1883	.25
114	Silver King, S.	Ariz.	1,000,000	100,000	100	.. ..	.. ..	.. ..	.. ..	1,425,000	July	1885	.25
115	Small Hopes, Cons., S.	Colo.	5,000,000	250,000	20	*	.. ..	.. ..	.. ..	1,137,500	May	1885	.20
116	Smuggler, S. L.	Colo.	600,000	60,000	10	.. ..	.. ..	.. ..	.. ..	66,700	Aug.	1883	.25
117	Socorro, C.	N. M.	250,000	2,500	100	.. ..	.. ..	.. ..	.. ..	4,000	Mch	1882	.00¾
118	South Yuba, G.	Cal..	2,000,000	40,000	50	*	.. ..	.. ..	.. ..	150,000	Oct.	1881	.75
119	Spring Valley, G.	Cal..	200,000	200,000	1	*	.. ..	.. ..	.. ..	50,000	Jan.	1881	.25
120	Standard, G. S.	Cal..	10,000,000	100,000	100	.. ..	.. ..	.. ..	.. ..	4,400,000	Mar.	1884	.25
121	Stormont, S.	Utah	200,000	200,000	1	*	.. ..	.. ..	.. ..	155,000	Nov.	1881	.05
122	St. Joseph, L.	Mo..	1,000,000	100,000	10	*	.. ..	.. ..	.. ..	450,000	Jun.	1885	.20
123	Syndicate, G.	Cal..	10,000,000	100,000	100	.. ..	July	1882	.15	70,000	May	1885	.10
124	Tip Top, S.	Ariz.	10,000,000	100,000	100	250,000	Sept	1883	.25	100,000	Nov.	1881	.20
125	Tombstone, G. S.	Ariz	12,500,000	500,000	25	.. ..	.. ..	.. ..	.. ..	1,250,000	Apl.	1882	.10
126	True Fissure, G. S. L.	Utah	1,500,000	150,000	10	.. ..	.. ..	.. ..	.. ..	75,000	Jun.	1883	.15
127	United Gregory, G.	Colo.	300,000	300,000	1	.. ..	.. ..	.. ..	.. ..	42,000	Apl.	1883	.25
128	United Verde, C.	Ariz.	3,000,000	300,000	10	*	.. ..	.. ..	.. ..	97,500	Feb.	1884	.20
129	Valencia, M.	N. H.	150,000	1,500	100	*	.. ..	.. ..	.. ..	18,750	Apl.	1885	2.50
130	Vizina, S.	Ariz.	5,000,000	200,000	25	*	.. ..	.. ..	.. ..	140,000	Apl.	1882	.10
131	Yellow Jacket, G. S.	Nev..	12,000,000	120,000	100	5,358,000	Feb.	1882	1.00	2,184,000	Aug.	1871	1.50

NON-DIVIDEND-PAYING MINES.

	Name and Location of Company.		Capital Stock.	Shares. No.	Shares. Par Value.	Assessments. Total levied to date.	Assessments. Date and amount per share of last.		
1	Albion, S. L.	Nev..	$15,000,000	150,000	$100	$577,000	July	1883	.50
2	Allouez, C.	Mich	2,000,000	80,000	25	240,000	Feb.	1884	.50
3	Alpha Con., G. S.	Nev..	3,000,000	30,000	100	415,000	Jan.	1885	.50
4	Alta, S.	Nev..	10,080,000	100,800	100	1,926,200	Apl.	1885	.25
5	American Flag, S.	Colo	1,250,000	125,000	10	300,000	Jun.	1877	.25
6	Barcelona, G.	Nev..	5,000,000	200,000	25	*	.. ..	.. ..	.. ..
7	Battle Creek, G.	Dak.	5,000,000	200,000	25	.. ..	.. ..	.. ..	.. ..
8	Bear Creek, G.	Cal..	300,000	300,000	1	.. ..	.. ..	.. ..	.. ..
9	Beauce	N. S.	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..
10	Bechtel Con., G.	Cal..	10,000,000	100,000	100	173,500	n.	1883	.10
11	Belvidere	Cal..	.. ..	60,000	.. ..	92,000	b.	1882	.15
12	Belmont, S.	Nev..	5,000,000	50,000	100	.. ..	Feb.	1885	.25
13	Best & Belcher, G. S	Nev.	10,080,000	100,800	100	1,597,390	Jun.	1885	.50
14	Big Pittsburg, S. L.	Colo.	20,000,000	200,000	100	*	.. ..	.. ..	.. ..
15	Black Jack, G.	Cal..	250,000	100,000	2½	.. ..	.. ..	.. ..	.. ..
16	Bonanza Chief	Mon	1,000,000	1,000,000	1	*	.. ..	.. ..	.. ..
17	Bondholder	Colo	500,000	200,000	2½	.. ..	.. ..	.. ..	.. ..
18	Boston Con., G	Cal..	10,000,000	100,000	100	170,000	Nov	1883	.25
19	Boulder Con	Colo.	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..
20	Bradshaw, S.	Ariz.	2,250,000	225,000	10	.. ..	.. ..	.. ..	.. ..
21	Buckeye	Colo.	2,000,000	400,000	5	*	.. ..	.. ..	.. ..
22	" preferred	Colo.	.. ..	.. ..	.. ..	*	.. ..	.. ..	.. ..
23	Bull-Domingo, S. L.	Colo.	10,000,000	200,000	50	*	.. ..	.. ..	.. ..
24	Bullion, G. S.	Nev.	10,000,000	100,000	100	4,570,000	July	1885	.25
25	Bye and Bye	Ariz.	1,000,000	100,000	10	*	.. ..	.. ..	.. ..
26	Calaveras, G.	Cal..	500,000	500,000	1	*	.. ..	.. ..	.. ..
27	Cal. W'r & M. Co., G.	Cal..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..
28	Caledonia, S. H., G.	Dak.	10,000,000	100,000	100	505,000	May	1885	.15
29	Castle Creek, G.	Idah.	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..
30	Catskill, S.	Nev..	1,500,000	300,000	5	.. ..	.. ..	.. ..	.. ..
31	Central Arizona, S.	Ariz.	10,000,000	100,000	100	.. ..	.. ..	.. ..	.. ..
32	Chapparal	Cal..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..
33	Cherokee, G.	Cal..	1,500,000	150,000	10	.. ..	.. ..	.. ..	.. ..
34	Chollar, S.	Nev..	11,200,000	112,000	100	760,000	May	1885	.50
35	Climax	Colo.	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..
36	Con. Cal & Va., G. S.	Nev..	21,600,000	216,000	100	108,000	Jan.	1885	.20
37	Con. Imperial, G. S.	Nev..	50,000,000	500,000	100	1,050,000	May	1885	10
38	Con. Pacific, G.	Cal..	6,000,000	60,000	100	150,000	Mar	1883	.15
39	Crescent, S. L.	Colo.	3,000,000	300,000	10	*	.. ..	.. ..	.. ..
40	Crocker, S.	Ariz.	10,000,000	100,000	100	25,000	Oct.	1884	.25
41	Crowell, G.	N. C	500,000	500,000	1	.. ..	.. ..	.. ..	.. ..
42	Coxheath, C.	N. S.	500,000	100,000	5	.. ..	.. ..	.. ..	.. ..
43	Dahlonega, G.	Ga..	250,000	250,000	1	*	.. ..	.. ..	.. ..
44	Dardanelles, G.	Cal..	1,000,000	100,000	10	.. ..	.. ..	.. ..	.. ..
45	Decatur	Colo.	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..
46	Dunderberg, S.	Colo	1,500,000	150,000	10	*	.. ..	.. ..	.. ..
47	Durango, G.	Colo.	500,000	500,000	1	*	.. ..	.. ..	.. ..
48	Elko Con., S.	Nev..	.. ..	.. ..	.. ..	.. ..	Mar	1884	.15
49	Empire, S.	Utah	10,000,000	100,000	100	.. ..	.. ..	.. ..	.. ..
50	Enterprise	Colo.	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..
51	Eureka Tunnel, S. L.	Nev..	10,000,000	100,000	100	*	.. ..	.. ..	.. ..
52	Exchequer	Nev.	10,000,000	100,000	100	820,000	Jan.	1885	.20
53	Globe Copper	Ariz.	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..
54	Gold Placer, G.	Colo.	5,000,000	200,000	25	*	.. ..	.. ..	.. ..
55	Goodshaw, G.	Cal..	10,000,000	100,000	100	204,314	Jan.	1884	.10
56	Granville, G.	N. C.	300,000	300,000	1	*	.. ..	.. ..	.. ..
57	Harlem M. & M. Co, G.	Cal..	1,000,000	200,000	5	.. ..	.. ..	.. ..	.. ..
58	Head Center, S.	Ariz.	5,000,000	200,000	25	170,000	Jan.	1881	.10
59	Hidalgo, S.	Mex.	200,000	20,000	10	*	.. ..	.. ..	.. ..
60	Hortense, S.	Colo.	2,000,000	200,000	10	.. ..	.. ..	.. ..	.. ..
61	Julia Cons, G. S.	Nev..	11,000,000	110,000	100	1,427,000	Apl.	1885	.10
62	Lacrosse, G.	Colo.	1,000,000	100,000	10	*	.. ..	.. ..	.. ..
63	Leviathan, S.	Nev..	10,000,000	100,000	100	380,000	Sept	1882	.25
64	Lucerne, S.	Colo.	5,000,000	500,000	10	*	.. ..	.. ..	.. ..
65	Mammoth Bar, G.	Cal..	10,000,000	100,000	100	71,000	Mar.	1884	.15
66	Mariposa pref., G.	Cal..	5,000,000	50,000	100	1,687,500	Dec.	1881	..
67	" common, G.	Cal..	10,000,000	100,000	100	1,975,000	Feb.	1883	.25
68	May Belle, G.	Cal..	10,000,000	100,000	100	84,000	Dec.	1881	.20
69	Mayflower, S.	Nev..	10,000,000	100,000	100	60,000	Mar	1884	.15
70	Mexican, G. S.	Nev.	10,000,000	100,800	100	2,490,160	Feb.	1885	.25
71	Michoacan Synd.	Mex.	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..
72	Miner Boy, G. S. L.	Colo.	5,000,000	500,000	10	*	.. ..	.. ..	.. ..
73	Miller	Nev	5,000,000	200,000	25	.. ..	.. ..	.. ..	.. ..
74	Mono, G.	Cal..	5,000,000	50,000	100	560,000	Jun.	1885	.50
75	Moose Silver, S.	Colo.	3,000,000	300,000	10	*	.. ..	.. ..	.. ..
76	Nevada Syndicate	..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..
77	New Pittsburg, S. L.	Colo	2,000,000	200,000	10	*	.. ..	.. ..	.. ..
78	North Standard, G.	Cal..	10,000,000	100,000	100	20,000	Nov	.. ..	.. ..
79	Noonday	Cal..	600,000	60,000	10	208,000	Dec.	1881	.10
80	Old Dominion, C.	Ariz.	3,000,000	300,000	10	.. ..	.. ..	.. ..	.. ..
81	Oriental	Nev..	2,000,000	200,000	10	.. ..	.. ..	.. ..	.. ..
82	Oriental & Miller, S.	Nev..	10,000,000	400,000	25	.. ..	.. ..	.. ..	.. ..
83	Overman, G. S.	Nev..	11,520,000	115,200	100	3,685,040	Apl.	1885	.20
84	Peer, S.	Ariz.	10,000,000	100,000	100	75,000	Jan.	1885	.50
85	Peerless, S.	Ariz.	10,000,000	100,000	100	130,000	May	1885	.30
86	Plutus, G. C. S. L.	Colo	2,000,000	200,000	10	*	.. ..	.. ..	.. ..
87	Potosi.	Nev..	10,200,000	112,000	100	865,600	July	1885	.50
88	Quartz Creek	..	.. ..	.. ..	100	.. ..	.. ..	.. ..	.. ..
89	Rappahannock, G.	Va	.. ..	250,000	.. ..	*	.. ..	.. ..	.. ..
90	Red Elephant, S.	Colo.	500,000	500,000	1	*	.. ..	.. ..	.. ..
91	Retort M. & M. Co.	Colo.	.. ..	.. ..	10	.. ..	.. ..	.. ..	.. ..
92	San Pedro, G. S. L.	N. M.	.. ..	400,000	.. ..	.. ..	.. ..	.. ..	.. ..
93	Silver Cliff, S.	Colo.	5,000,000	200,000	25	*	.. ..	.. ..	.. ..
94	Sonora Con	Mex.	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..
95	South Bodie, G.	Cal..	.. ..	100,000	.. ..	100,000	Mar	1882	.15
96	South Bulwer, G.	Cal..	10,000,000	100,000	100	195,000	May	1881	.25
97	South Hite	Cal..	10,000,000	100,000	100	.. ..	Jan.	1883	.05

NEW YORK MINING STOCKS.

DIVIDEND-PAYING MINES.

NAME AND LOCATION OF COMPANY.	HIGHEST AND LOWEST PRICES PER SHARE AT WHICH SALES WERE MADE.												SALES.
	July 18.		July 20.		July 21.		July 22.		July 23.		July 24.		
	H.	L.	H.	L.	H.	L.	H.	L.	H.	L.	H.	L.	
Alice, Mon.	2.00												500
Amie Con., Co.													
Argenta													
Bassick, Co.													
Belle Isle, Ne.													
Bodie Cons., Ca.	1 60	1.55	1.70	1 65	2.00	1 70	2.05	2.00	2.15	2.05	1 90		5,025
Breece, Co.	.12												100
Bulwer, Ca.	.51	.50	.48	.47	.49	.48	.49				.50		2,300
California, Ne.													
Cal. & Hecla, Mich.													
Castle Creek													
Chollar			1.50										300
Chrysolite, Co.													
Colorado Central													
Cons. Cal. & Va., Ne.	1.75		1.95	1.85	2 20	2.15	2 20	2 10	2.05	1 90	1 95	1.85	4,700
Crown Point													
Dunkin, Co.													
Eureka Cons., Ne.											6.50		150
Father de Smet, Dk.			4.00		4.00				3 95				425
Findley, Ga.													
Gold Stripe, Ca.													
Gould & Curry, Ne.													
Grand Prize, Ne.	.70	.65			.60								900
Green Mountain, Ca.													
Hale & Norcross, Ne.	7.00		7.13						7 25		7.25	7.13	750
Hall-Anderson, N. S.													
Homestake, Dk.			15.25				14.88						150
Horn-Silver, Ut.	2.00	1.90	1.95		2.00	1.95	1.90		2 00	1.9)	1.95		4,550
Independence, Ne.													
Iron Silver, Co.					1.15								100
Leadville C., Co.	.40		.38		.40								800
Little Chief, Co.	.28										.28		1,500
Little Pittsburg, Co.													
Martin White, Ne.													
Moulton													
Navajo, Ne.	1.00	.95							.95				850
North Belle Isle, Ne.													
Ontario, Ut.	24.50				23.50				25.00				
Ophir									1 35		1.20		450
Plymouth	17.63	17.50			17.62		17.50		17 3)		17.50		34)
Potosi													
Quicksilver Pref., Ca.													
" Com., Ca.													
Robinson Cons., Co.	.62		.65						.65		.65		500
Savage, Ne.	2.22					2 55					2 50	2.35	545
Sierra Nevada, Ne.											1.35		100
Silver King, Ar.					6.50		6.88						85
Spring Valley, Ca.													
Standard, Ca.					1.45	1.30			1.30	1.25			800
Stormont, Ut.													
Tip Top, Ar.													
Yellow Jacket											2.00		200

Dividend shares sold, 26,273. Non-dividend shares sold, 17,950.

NON-DIVIDEND-PAYING MINES.

NAME AND LOCATION OF COMPANY.	HIGHEST AND LOWEST PRICES PER SHARE AT WHICH SALES WERE MADE.												SALES
	July 18.		July 20.		July 21.		July 22.		July 23.		July 24.		
	H.	L.	H	L.	H.	L.	H.	L.	H	L.	H.	L.	
Albion													
Alta	.45		.40		.40		.45		.45		.40		1,400
American Flag													
Barcelona, G.													
Bechtel Con., G.													
Belvidere													
Belcher													
Best & Belcher, G. & S.	2.20		2.90								2.35	2 25	700
Big Pittsburg, S. L.													
Bradshaw, S.													
Bull-Domingo, S.L.													
Cal., B. H., G													
Central Arizona, S.													
Climax, Co.													
Cons. Imperial													
Con. Pacific													
Dahlonega													
Decatur													
Durango, G.													
Eastern Oregon													
Goodshaw, G.													
Harlem M. & M. Co.													
Hortense, S													
Kossuth													
Lacrosse, G											13	.12	3,100
Mariposa Pref., G													
" Com., G													
Mexican, G. & S.									1.00			.85	550
Mono													
New Pittsburg													
Noonday													
North Standard, G.													
N. Horn-Silv'r, S L.													
Pri'nt'l & Miller, S													
Potosi													
Sappanamocca, G													
Red Elephant, S.													
Ruby, of Arizona													
Silver Cliff, S.													
Sonora Con.													
South Bodie, G													
South Bulwer, G													
South Hite													
South Pacific													
State Line, 1 & 4, S.													
" Nos. 2 & 3, S.													
Sutro Tunnel	.17		.18	.17	.17						.18		10,000
Taylor Plumas													
Tioga													
Unadilla, S													
Union Cons., G	.90	.85									.90		700
Utah													

country this year of 9500 tons. The bituminous coals, especially for steam purposes, are selling lower than ever before. Contracts for Illinois coals are made at $2.30 for the summer and $2.40 for winter delivery. Ellsworth & Co. have made a large contract to deliver to Armour & Co. Hocking coal at $2.45 on cars for the year, they to accept Armour & Co.'s weights in settlement.

The receipts of bituminous coal for the first ten days of July, 1885, increased nearly 5000 tons over the receipts of 1884 for the corresponding time, making the total increase in the receipts of bituminous coal from May 1st to July 10th, 1885, over the receipts for the same period in 1884, 139,440 tons. All kinds of coal seem to be plenty, even to be sold at the "ruinously" low prices now obtaining. If sales at present prices are netting a loss, why don't the producers curtail production?

Cincinnati. July 20.

[From our Special Correspondent.]

Your JOURNAL has had no report or notice of the coal trade at this point for many months. This has hardly been satisfactory to your subscribers here, or those at other places who are interested in this market. Not that your readers here depend on you for home news, but there is a feeling here that we have a market of some importance, and we like to see ourselves in print and recognized in good company. Cincinnati is an important market for bituminous coal. Probably more coal is consumed and distributed here than at any other point in the country west of Buffalo, except Chicago.

During the last thirty years, the business has had a steady growth, probably about equal to that of any department of our commerce. Statistics show that it has about doubled every ten years.

	Tons.
In 1854, it amounted to about	300,000
1864, " " "	600,000
1874, " " "	1,300,000
1882, " " "	2,200,000
1884, " " "	2,000,000

It would doubtless have reached 2,400,000 tons in 1884 had the year been one of average prosperity in general business, and had not the Ohio River been specially unfavorable for coal transportation. The careful observer, however, will not look for this rate of growth to continue in the future. Many agencies are at work undermining and permanently damaging this branch of our trade. Some of these agencies might be successfully resisted, others will be likely to maintain the vantage they have already secured.

Of these disturbing agencies, the most important is probably the railroad. During the last year or two, the railroads have made efforts to get business and made rates for freight that have been without precedent. They carry coal from the mines about Pittsburg to the lakes, and to all points through the West and Northwest, at whatever rates may be necessary to get the business. They carry coal from the mines in Central Ohio to all towns in the interior, and even to Cincinnati itself.

It is not many years since Western and Southern Ohio and all the States west and south of Chicago, also much of Michigan and Kentucky, looked to Cincinnati for a large portion of their coal supply. Nearly all the gas-coal in the territory named went from Cincinnati. Youghiogheny was the standard for manufacturing and domestic use, and that coal all went from here.

Now, scarcely a gas company in Ohio or Michigan is supplied from here; many of the larger ones west of us are supplied from other directions. The mines of Central Ohio, Indiana, and Illinois have met the Youghiogheny for manufacturing and domestic purposes, and, having a great advantage in price, have driven it from the field. The blacksmith coals have been sent by the enterprising producers of the Piedmont, Blossburg, and New River regions directly to the consumers, passing by the middle-men of this point.

The Big Four Railroad Company, through its enterprising president, has entered the ring as a competitor for the Western gas company business, and by means of its great elevator at North Bend, aided by the lack of terminal facilities for the other roads at Cincinnati, it has made almost a clean sweep of this entire business. "The longest pole knocks the persimmons." It has hoggishly knocked and bagged them all. The only consolation the other roads and the Cincinnati dealers proper have is, that they must be too unripe and bitter to be good for any thing. In other words, that the coal has had to be sold and transported at prices that could pay no profit.

Such have been the agencies at work outside. On the inside, the condition of things has not been satisfactory. For the last six months, the river has been favorable for transportation. There have been no strikes of importance; consequently, the supply has been abundant, and prices have ruled low, both at wholesale and retail. Among the dealers, there has been no co-operation to maintain prices or hold on to trade that legitimately belongs here. "Go as you please," has been the order of things. The scramble for orders has been promiscuous and unseemly—even annoying to consumers. The man that sells the cheapest gets the orders, and nobody except the consumer is benefited.

It is not pleasant to make this exhibition of this large department of our commerce, and the only object in making it is, that it may see itself as others see it, and perhaps be led to pause a little and see whether a better condition of things may not be inaugurated.

There seems to be a feeling with some of the large concerns, that the policy now pursued will soon rid the trade of several of the small firms, and then the business can be purified and handled in much better shape. These large concerns should learn, if they have not already done so by experience, that, when they have succeeded in causing the failure of their weaker brethren, they do not drive them from the field. They speedily rise up again, and become more troublesome than before. If such were not the case their place must needs be occupied by others, and perhaps a more formidable competition would be the result.

The coal commerce of Cincinnati is manifestly not managed in such a way as to promote its greatest advancement or to secure fair profits to its managers, and it behoves these managers, if they would serve their own interests or the good of Cincinnati, to stop trying to cut each other's throats, and put their heads together—the closer the better—and plan for better things. If they would accomplish the greatest results, they may have to resort to the great powers of co-operation, combination, and consolidation.

The great problem to solve is to give every consumer the fuel best suited to his work at the lowest practicable price. This involves the questions of quality and quantity, cheapest transportation and storage, and the best and most approved methods and appliances for handling and distributing.

There is plenty of capital and plenty of ability in the Cincinnati coal trade, if it could be concentrated and properly directed, to do the business with success and profit to all concerned, and to make that department of business a large and creditable one.

During the past four months, prices of coal have

ruled low, with very slight fluctuations, until the past week. Prices of Youghiogheny are now fully a cent a bushel higher than they have been before during the period named. Second pool is now firm at 8 cents a bushel, and fourth pool at 7 cents. The stocks in first hands are small, and for the most part are held for a still further advance. Anthracite is unsettled and irregular. Cincinnati has evidently been a point of special interest to the producers and shippers of this coal. Agents from all the companies have been here, and their wares have been offered at lower prices than have been known for many years. It would be hardly practicable or fair to try to name the prices offered by the various companies. The trade here in this coal is not large, and never is, and it is difficult to understand why the large companies make such efforts to secure what little there is.

The river continues too low for coal transportation, and as a consequence the tendency of prices is upward. There is now no Pittsburg coal afloat to be bought for less than 8 cents a bushel. The stock in first hands and that at the elevators is becoming rapidly reduced, and within a few weeks we shall be bringing soft coal in by railroad.

Most of the dealers advanced prices on the 19th to 11 cents delivered and 9 cents at the elevators. This will be the established price within a very few days all along the line.

The anthracite trade shows no perceptible improvement, though it is noticed that shippers are not willing any longer to make concessions to secure orders. It is thought that the bottom has been reached. Prices of the free-burning grades continue at $6.50, delivered to consumers ; Lehigh, $7.

The list for this week is as follows :

	Afloat.	Delivered to consumers.
Youghiogheny	8 cts. per bush.	11 cts. per bush.
Kanawha	7 " "	10 " "
Pomeroy	6 " "	9 " "
Coke	6 " at yards.	8 " "
Coke, crushed	8 " "	10 " "
Anthracite, Wilkesbarre and Lackawanna		$6.50 per ton.
Anthracite, Lehigh		$7.00 delivered.

FINANCIAL.

NEW YORK, Friday Evening, July 24.

The mining market has been dull, and little business has been done. The total transactions only amounted to 44,223 shares, and show a decrease of 38,025 shares, as compared with those of the preceding week. The prices have varied but little.

Bodie Consolidated has been the feature of the California shares, and was actively dealt in, advancing from $1.55@$2.15 ; sales, 5025 shares. Bulwer sold at from 48@50c. ; sales, 2300 shares. Standard showed a downward course ; it opened at $1.45, and closed at $1.25. Telegraphic advices report that the mine is looking very well, and that the financial condition of the company is improving. Plymouth Consolidated keeps up its brilliant record, and this week comes to the front with its 27th consecutive monthly dividend of $50,000. The sales are small ; but taking into consideration the high figures paid for the stock, the business done is very large. The prices ranged from $17.38@$17.63, with sales of 345 shares.

Colorado stocks have been exceedingly quiet, and sales are reported of Iron Silver at $1.15. Robinson Consolidated, at from 62@65c. Leadville, at from 38@40c. Little Chief, at 28c. Breece, at 12c.

The same may be said of the Comstocks. Consolidated California & Virginia, which showed an upward tendency at the beginning of the week, declined toward the end ; the opening price was $1.75 ; the highest figure reached was $2.20 ; and the closing price, $1.85 ; sales, 4700 shares. Hale & Norcross has been firm at from $7@$7.25. Savage, at $2.25. Best & Belcher advanced from $2.20@$2.90. Sutro Tunnel shows a very small business compared with last week ; it sold at its usual price. Chollar is quoted at $1.50. Mexican, at from $1@85c. Union Consolidated, at from 85@90c.

Ontario has just announced its regular monthly dividend of $75,000 ; a few shares sold at from $23.50 @$25. Horn-Silver remains as usual at from $1.90@ $2. Stormont is lower at 6c.

A small business was done in Silver King at from $6.50@$6.88. Alice, at $2. Homestake, at $15.25@ $14.88. Father de Smet, at from $4@$3.95.

A complete summary of the market will be found elsewhere.

The Governing Committee of the Consolidated Stock and Petroleum Exchange has adopted the time system for stock settlements. The new rules provide for the deposit of differences daily with the Clearing-House, and a final settlement between traders at the end of each week. By this, brokers carrying stocks will escape paying interest, while those who are "short" of them will be relieved from the possibility of "shaves" on borrowed stock. The new system is expected to result in a large increase in business. It will be put into effect on August 3d.

Coal Stocks.

The stock market until to-day was almost a continuously advancing one. The business has been very large, and any thing and every thing has been advancing. The public has been informed and it believes that a great railroad deal is under way, and every body is trying to "catch on." Previous to this movement, speculation had come to a stand-still, and the large operators were compelled to live on each other. This was very unsatisfactory, so a deal was made which took in bulls and bears alike, and the public is to be the game. When there has been a liberal distribution of stocks, it will be found that the prospects were not nearly so bright as they seemed to be, and the public will be shown that it will be wise to part with their purchases at very much lower prices.

Just why the coal stocks should have participated in the boom it is hard to say ; but nevertheless they figure to a very liberal extent. The sales of Lackawanna aggregate 223,511 shares. After selling down to $98⅝ on Monday, it advanced to $103 yesterday. This is an advance of 9¼ per cent in two weeks. It closed to-day at $101⅝ bid. The sales of Delaware & Hudson aggregate 7604 shares. This stock sold at $79¼ on Monday and $83⅛ yesterday, closing at $81⅛ to-day. Jersey Central has been a feature of the market. There was an advance of 9 per cent as compared with the closing price on Tuesday and the opening price yesterday. The stock has ranged between $39⅝ and $49 during the week, and closed at $45¼ to-day. Philadelphia & Reading has also attracted considerable attention, selling at $14@$21, with transactions amounting to 20,000 shares. Of all the upward movements in this boom, the advances in Reading and Jersey Central appear to be the wildest. In fact, the causes that are supposed to influence other companies for the better are marked injuries to these companies.

Pennsylvania has been active and strong in the Philadelphia market, where the sales up to last night amounted to 16,634 shares at $50⅛@$52¼. Reading and Jersey Central were also active in that market.

The conference at the Grand Central Depot between President Roberts, of Pennsylvania, Messrs. Depew, J. P. Morgan, H. McK. Twombly, and several members of the South Pennsylvania syndicate is said to have resulted in making considerable progress toward a transfer of the South Pennsylvania road to the Pennsylvania. After the meeting, Messrs. Depew and Morgan left for Saratoga to consult with Mr. Vanderbilt. A meeting of the South Pennsylvania syndicate was held in this city to-day. Those who were present were disinclined to talk much about the proceedings, although it is understood that nothing was done. The whole matter is to receive further discussion.

COAL STOCKS.

NAME OF COMPANY.	Par value of shares.	Quotations of New York stocks are based on the equivalent of $100. Philadelphia prices are quoted so much per share.												Sales from July 18th to July 24th, inclusive.
		July 18.		July 20.		July 21.		July 22.		July 23.		July 24.		
		H.	L.	H.	L.	H.	L.	H.	L.	H.	L.	H.	L.	
Barclay Coal														
Cameron Coal	50									6⅛	6	5½		600
Col. C & I	10	11⅝	11	11⅛	11⅛	11¼	11	12¼	11	12⅛	11⅛	12¾	11¾	12,701
Ches. & O. RR	100	5		6		5½	5	6						650
Consol. Coal	100													
Cumb. C. & I.	100													
Del. & H. C	100	80		80⅝	79¼	80¾	80	80¼	79¾	83⅛	80⅛	82¼	81⅛	7,604
D., L. & W. RR	50	101	99⅝	100¾	98⅝	99⅞	98⅜	99½	98⅛	103	98⅞	102¼	99⅝	223,511
Elk Lick Coal Co														
Lehigh C. & N.†	50					42⅜	42¼	42⅛	42⅜	43½	43⅛			864
Lehigh Valley RR.†	50	57¾	57½			57⅜	57½	57⅜	57½	58	57¾			347
L. & W. C. & I Co.														
Maryland Coal	100													
Montauk Coal	100													
Morris & Essex	50							126						20
New Central Coal	100	25												400
N. J. C. RR.	100	40½	39¾	40¾	39⅝	41	39½	47⅛	40¼	49	46½	47	44½	108,663
N. Y. & S. Coal	50													
Penn. Coal	50													
Penn. RR.†	50	50¾	50⅛			51½	50⅛	51⅝	51⅜	52½	51¾			16,634
Ph. & R. RR.*	50	*		14⅞	14¼	14⅝	14¼	18½	15¼	21	18⅝	20	17	40,697
Spring Mountain	50													
Westmoreland Coal.†	50													

* Of the sales of this stock, 20,697 shares were in Philadelphia and 20,000 in New York. Total sales, 412,691.
† The quotations for these stocks are not percentage, but actual price.

Dividends.

Granite Mountain Mining Company, of Montana, has declared a dividend (No. 6) of $40,000, payable at St. Louis, July 31st.

Plymouth Consolidated Gold Mining Company, of California, has declared a dividend (No. 27) of $50,000, payable August 5th.

Mount Diablo Mining Company, of Nevada, has declared a dividend (No. 7) of twenty cents a share, payable at San Francisco, July 30th.

Ontario Silver Mining Company, of Utah, has declared a dividend (No. 109) of 50 cents a share, or $75,000, payable on the 31st inst. Total dividends to date, $6,575,000.

Quincy Mining Company, of Michigan, has declared a dividend (No. 34) of $2 a share, payable August 17th ; to registered stockholders on the 25th inst.

ASSESSMENTS.

COMPANY.	No.	When levied.	Delinquent in office.	Day of sale.	Amount.
Alaska, Ala	11	June 30	Aug. 6	Aug. 23	.40
Auitman, Cal	2	June 15	July 20	Aug. 10	.01
Best & Belcher, Nev.	32	June 2	July 7	July 28	.50
Brunswick, N. B					5.00
Bullion, Nev				July	.25
Caledonia, Dak	16	May 28	July 10	Aug. 5	.15
Chollar, Nev.	16	May 18	June 24	July 15	.50
Con. Imperial, Nev.	22	May 10	June 23	July 15	.10
Con. Reforma, Mex.	6	July 1	July 31	Aug. 17	.10
Copper Mt. Con., Cal.	2	June 17	Aug. 13	Sept. 17	.01
Eintracht Gravel, Cal	18	May 26	*July 14	July 31	.05
Empire, Cal	3	May 15	June 16	July 14	.10
Gold Cañon, Cal	1	June 10	July 18	Aug. 4	.02½
Gould & Curry, Nev.	50	June 1	July 8	July 29	.40
Homeward Bou'd, Cal	4	June 12	July 20	Aug. 11	.25
Iron Hill, Dak	9	June 26	July 31	Aug. 17	.10
Johnson, Cal	1	July 1	Aug. 5	Aug. 25	.05
Justice, Nev	42	July 13	Aug. 17	Sept. 5	.15
Mono, Cal	22	June 17	July 22	Aug. 11	.50
Mountain Chief, Utah	2	June 18	July 28	Aug. 17	.10
Murchie, Cal	9	June 24	Aug. 7	Aug. 31	.10
Navajo, Nev	11	May 25	June 29	July 20	.25
Pay Day, Cal	3	June 2	July 14	Aug. 10	.02
Peerless, Ariz	4	May 18	June 23	July 17	.30
Potosi, Nev	19	July 14	Aug. 19	Sept. 10	.50
Ropes, Mich		June	July 15		.10
Savage, Nev.	63	July 1	Aug. 4	Aug. 24	.50
Scorpion, Cal	2	June 24	Aug. 1	Sept. 1	.25
Sierra Nevada, Nev.	82	June 9	July 15	Aug. 4	.25
Silver Hill, Nev	22	July 1	Aug. 7	Aug. 27	.10
St. Lawrence, Nev.	2	May 5	July 1	July 20	.50
Starlight, Cal	2	June 26	Aug. 1	Aug. 21	.05

* Had been delinquent. Earlier date postponed until time mentioned.

Pipe Line Certificates.

Messrs. Watson & Gibson, petroleum brokers, No. 49 Broadway, report as follows for the week :

The past week has seen quite an active and upward market in the petroleum speculation, and within the last four days the figures show an advance from 93⅝ cents per barrel to $1.02⅛ per barrel, some nine points, which tends to demonstrate the comparative ease with which the prices of this commodity advance when the "powers that be" take it in hand. There

have been no dispatches of importance from the field, and the statistical condition remaining so strong is the feature upon which it was and is fair to expect an advance in the prices of both crude and refined. There is no other commodity of equal importance in the uses of the public whose outlook for future supply is the same that is selling as cheap in proportion, and while it has a strong and sharp advance, and ought to have some reactions, we expect to subsequently see it sell still higher. The carrying rates are about 60 to 65 cents per 1000 barrels daily at present.

The following table gives the quotations and sales at the Consolidated Stock and Petroleum Exchange:

		Opening.	Highest.	Lowest.	Closing.	Sales.
July	18...	$0.94¾	$0.95⅛	$0.94⅛	$0.94⅝	2,492,000
	20...	.95	.95⅛	.93¾	.93¾	2,944,000
	21...	.93½	.94⅜	.93⅜	.93⅞	3,401,000
	22...	.94⅛	.95⅝	.94	.95½	4,260,000
	23...	.95⅝	1.00⅛	.95⅝	1.00	11,578,000
	24...	1.02½	1.02½	1.00½	1.01⅛	10,153,000
Total sales.....						34,828,000

San Francisco Mining Stock Quotations.

Daily Range of Prices for the Week.

Name of Company.	Closing Quotations. July 17.	July 18.	July 20.	July 21.	July 22.	July 23.
Albion						
Alpha						
Alta	.40	.40	.40	.45	.40	
Argenta						
Bechtel						
Belcher			.85	1.00	.95	
Belle Isle						
Best & Belcher	2.25	2 62½	2.75	2.50	2.37½	
Bodie	1.50	1.50	1.62½	1.75	1.87½	
Bullion						
Bulwer						
Challar	1.12½	1.25	1.25	1.25	1.25	
Con. Pacific						
Con. Cal. & Va.	1.75	2.00	2.12½	2.00	1.87½	
Crown Point		1.25	1.25	1.25	1.25	
Day						
Elko Cons						
Eureka Cons						
Exchequer						
Gould & Curry	1.50	1.62½	1.62½	1.50	1.50	
Grand Prize						
Hale & Norcross	6.75	6.87½	7.00	7.00	7.00	
Independence						
Martin White						
Mexican	.80	.85	.90	.90	.80	
Mono						
Mount Diablo			1.25		2.00	
Navajo		.95	.95	1.00	1.00	
Northern Belle						
North Belle Isle						
Ophir	1.12½	1.25	1.37½	1.25	1.25	
Overman						
Potosi	.40	.45	.45	.45	.40	
Savage	2.12½	2.25	2.25	2.25	2.25	
Scorpion						
Sierra Nevada	1.25	1.25	1.50	1.50	1.37½	
Silver King						
Tip-Top						
Union Cons	.85	.85	.95	.90	.85	
Utah	1.25	1.25	1.50		1.37½	
Wales Cons						
Yellow Jacket	1.62½	1.75	1.75	1.75	1.87½	

Boston Copper and Silver Stocks.

BOSTON, July 23.

[From our Special Correspondent.]

Dull but firm, is the rule in mining stocks, speaking more particularly of Lake Superior mines, for in others there is little market value indeed. The two companies attracting the most attention just now are the Calumet & Hecla and the Tamarack; the one being already the leading copper mine of Lake Superior, if not the world, while Tamarack has "great expectations" in its future. Calumet & Hecla steadily advanced from $174 to $180, Tuesday; but since then, it has boomed on to $187½ bid, without sales, and not a share offered this afternoon. Tamarack, on the other hand, further declined from $50@$46, and still offered at that. This decline is due to two causes. In the first place, the stock advanced too rapidly to $67, and reaction was natural. Then again, in its notice for the annual meeting, the proposition is made to increase the capital stock from 40,000 shares to 50,000, this 10,000 shares to go into the treasury for future use. The effect of this was to break the price, because that amount of stock is some time liable to come on to the market. The Tamarack is in no present need of money ($110,000 on hand); still it is not improbable that, in due time, an assessment of perhaps $3 a share will be needed fully to equip the mine. These two properties almost absorb the attention of the market, and for a time other Lake Superior stocks will, in a measure, be lost sight of. Quincy further declined from $36@$35½, the "smaller dividend" having been announced in the shape of $2, a disappointment in the expectations of two or three weeks ago, but not latterly. The stock closes $35 bid, $36 asked. Franklin, $¼ lower at $6½, with two sales only for the week. Allouez came out a little freely at 57½@60c., closing at the latter, asked. Osceola is nominal at $9½@$10, but has a slightly firmer tone.

In silver stocks, there is little doing, but the market is firmer on the small dealings. Bowman has advanced from 9c. to 14c., and closes strong at 12c. bid. Bijou has advanced to 16c. bid, and no stock offering. Catalpa went from 16@18c. Dunkin, quiet at 18c. Cusihuiriachic came out quite freely this week, dropping from about $1.20 to $1.14 on sales of 1300 shares, and at one time 1000 more were offered at that, but later on withdrawn. The company has 1,000,000 shares, but the larger portion of them is in strong hands, and never disturbed by market fluctuations. There is a growing belief that mining shares have seen their worst days, and that the future, although it may not be immediate, has a brighter look. Let the good time come. We are ready for it.

FREIGHTS.

Coastwise Freights.

Per ton of 2240 lbs.

Representing the latest actual charters to July 23d:

To	From Philadelphia	From Baltimore.	From New York shipping ports.
Alexandria	.60		
Annapolis			
Albany			
Baltimore	.58§		
Bangor		1.10	
Bath, Me	1.00	1.10	.90
Beverly	1.00		.90
Boston, Mass	1.00	1.10@1.30	.80
Bristol		1 10	
Bridgeport, Conn.		1.00	.50
Brooklyn		1.00	
Buffalo, N. Y.			
Cambridge, Mass.	1.00‡		.80‡
Cambridgeport	1.05‡	1.10	.80‡
Charleston, S. C.	.75	.80@.90	
Charlestown	1.00		
Chelsea	1.00		.80
City Point			
Com. Pt., Mass.			
E. Boston	1.00		.80
East Cambridge	1.00‡		
E.Gr'nwich, R. I.			
Fall River	.95		
Galveston		2.60	
Gardiner, Me			
Georgetown, D.C.			
Gloucester	1.10		
Halifax			
Hartford			
Hackensack			
Hudson			
Lynn	1.10@1.25		
Marblehead			
Medford			
Millville, N. J.			
Milton			
Newark, N. J.		1.15@1.20	
New Bedford	.90@1.00	1.05	.75
Newburyport		1.?0	
New Haven		1 00	.50
New London		1.05	.65@.70
New Orleans			
New-Berne			
Newport	1.00		.70
New York		1.00	
Norfolk, Va.	.50		
Norwich			.70@.75
Norwalk, Conn			
Pawtucket			
Philadelphia			
Portland, Me.	.75*	1.10	
Portsmouth, Va.	.50		
Portsmouth, N.H.		1.25	
Providence	.90	1.05	.70
Quincy Point			
Richmond, Va.	.60		
Rockland, Me			
Rockport			
Roxbury, Mass.	1.00		
Saco			
Sag Harbor			
Salem, Mass.	1.00@1.15		.85
Saugus			
Savannah		.90@1.00	
Somerset	.95	1.05@1.10	
Staten Island		1.00	
Trenton			
Washington	.60		
Weymouth			
Williamsbg, N.Y.		1.00	
Wilmington, Del.			
Wilmington, N.C.		.80@.90	

* And discharging. † And discharging and towing. ‡ 3c. Per bridge extra. § Alongside. ‖ And towing up and down. ¶ And towing. ** Below bridge.

DIVIDENDS.

PLYMOUTH CONSOLIDATED GOLD MINING COMPANY.

23 NASSAU STREET, NEW YORK, July 24, 1885.

DIVIDEND NO. 27.

The twenty-seventh consecutive monthly dividend of FIFTY THOUSAND DOLLARS, being *one per cent* on the capital stock of the company, or *fifty cents* per share, will be paid on the fifth day of August, at the Company's offices in New York and San Francisco.

W. VAN NORDEN, President.

THE ADAMS MINING COMPANY, SECRETARY'S OFFICE, 280 BROADWAY,

NEW YORK CITY, July 11, 1885.

DIVIDEND NO. 13.

A dividend of Ten Cents per share, being fifteen thousand ($15,000) dollars, will be payable to the stockholders of record, on and after the 20th day of July, 1885, at the office of the Farmers' Loan and Trust Company, Nos. 20 and 22 William Street, New York City. Stock-books will close on the 17th, and reopen on the 21st day of July, 1885. THOMAS D. ADAMS, President.

JAMES DUNNE, Secretary.

COLORADO CENTRAL CONSOLIDATED MINING COMPANY, 48 EXCHANGE PLACE, Room 26,

NEW YORK, July 3, 1885.

Dividend No. 3, of Five Cents per share, has been declared to the stockholders of this company, payable on August 15th, at the Farmers' Loan and Trust Company Transfer-books close on August 1st, reopening on August 17th.

PAUL LICHTENSTEIN, President.

QUINCY MINING COMPANY.

NEW YORK, July 22, 1885.

DIVIDEND NO. 34.

Two dollars per share will be payable August 17th next, to registered holders 25th inst. Massachusetts holders will be paid at the office of Mr. N. H. Daniels, Transfer-Agent, 76 State street, Room 5, Boston. By order.

WILLIAM ROGERS TODD, Treasurer.

OFFICE OF THE ONTARIO SILVER MINING COMPANY, MILLS BUILDING, 15 BROAD ST.,

NEW YORK, July 20, 1885.

DIVIDEND NO 109.

The Regular Monthly Dividend of FIFTY CENTS per share has been declared for June, payable at the office of the company, San Francisco, or at the Transfer-Agency in New York, on the 31st inst. Transfer-books close on the 25th.

LOUNSBERY & CO., Transfer-Agents.

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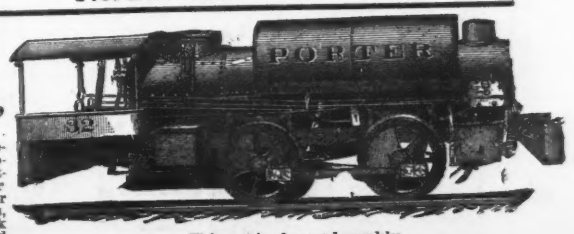

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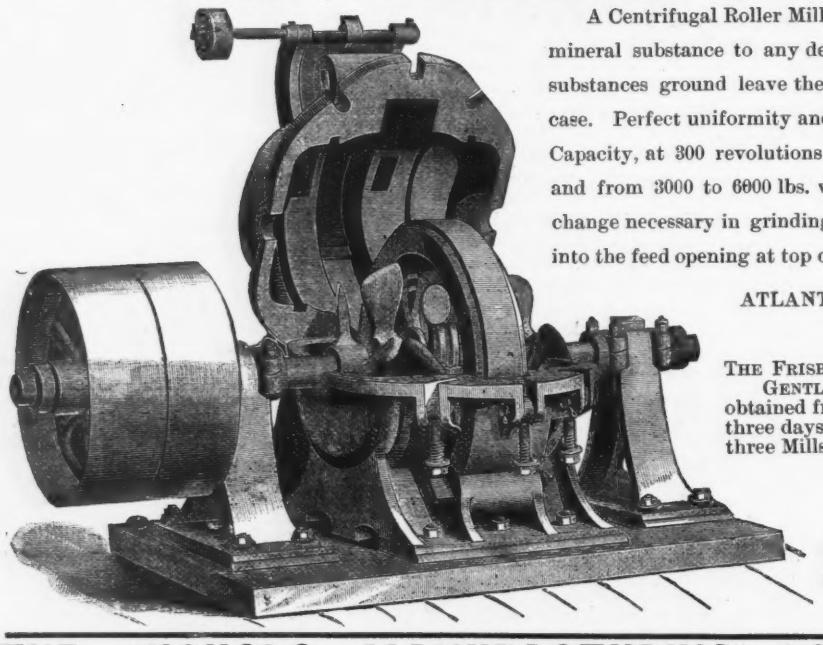
THE FRISBEE-LUCOP MILL.



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SUPERINTENDENT'S OFFICE,
CHARLESTON, May 26-7, 1885.

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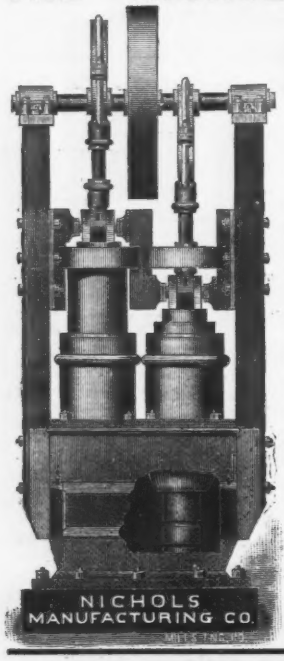

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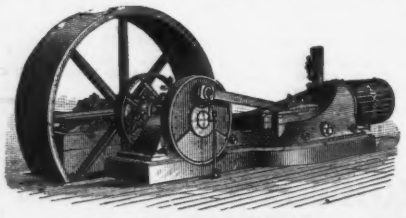

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